KU LEUVEN

FACULTEIT SOCIALE WETENSCHAPPEN

Individual and couple level perspectives on male education and fertility in Europe at the start of the 21st century

Alessandra TRIMARCHI

Proefschrift aangeboden tot het verkrijgen van de graad van Doctor in de Sociale Wetenschappen

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If I were a carpenter, and you were a lady,

would you marry me anyway? Would you have my baby?

—Tim Hardin, “If I were a carpenter”

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Thesis overview

Abstract

The aim of this dissertation is to study the relationship between education-specific mate patterns and fertility behavior, addressing the following general question: how does educational assortative mating affect fertility behavior? To address this question, the dissertation develops, theoretically and empirically, two under-researched topics in the field of family demography: men's and couple's fertility. The empirical analysis of this study is centered on a micro-level perspective that looks at the effects of the three main dimensions of education (enrollment, attainment level, and field of study) on the transition to parenthood and higher order births. The macro-level aspect is considered by keeping a multi-country design. Overall, this thesis shows that the individual-level analysis is needed to account for the role of partners' education in the study of fertility; this is connected to the fact that education is an important dimension that determines the selection into union for men and, expectedly, for women. Consequently, the couple-level analysis may shed light on how educational pairing affects fertility outcomes and its consequences for the reproduction of societal inequalities.

Introduction

Until the end of the 1960s, marriage and childbearing were strictly connected processes in Western societies; moreover, the male-breadwinner family model prevailed: the men were the achievers in the labor market, whereas the women had to care for the house and the family. Women's age and men's earnings at marriage were considered the main determinants of fertility behavior. Couples mostly constituted of partners with similar family backgrounds and husbands, who were in charge of the family income, were typically more educated than their wives. Women's participation in the labor market was characterized by several intermittences or it was non-existent. During these years, college education for women was a kind of marriage market, rather than a real investment in their human capital (Marini 1978).

Since the end of the 1960s and beginning of the 1970s, a combination of structural changes enhanced what Goldin (2006) called a "quiet revolution." Women's education expansion, with ensuing labor force participation, began to massively increase. Women began to invest their human capital in consolidating their position in the labor market: they changed their *horizon* from having a job to having a career (Goldin 2006). Women's educational expansion and ensuing labor force participation have been often considered a major cause of changes in family behaviors (Sobotka 2004; Esping-Andersen 2009). Given those changes, scholars interested in fertility have primarily focused on women's characteristics, whereas the role of men and changes in men's union formation and fathering behaviors have hardly been considered.

One exception is the work of Oppenheimer (1994), according to which low and delayed fertility could have also be an outcome, at least to some extent, of the deteriorating economic position of young men. The increased uncertainties generated by the globalized world challenged the capability of young men to form new families, due to a lack of stable professional positions and income (Oppenheimer, Kalmijn and Lim 1997; Oppenheimer 2003; Blossfeld et al. 2005). Overall, men's economic position is still necessary, but not sufficient, to be in a stable relationship and have children (Toulemon and Lapierre-Adamcyk 2000; Cherlin 2016).

The two arguments, on one hand the changing role of women and on the other hand the deterioration of young men's economic position, are not competing after all, since one does not exclude the other. Still, while a lot of studies have focused on women, much less is known about men. Contextually, scholars claimed that new family behavior, such as the diffusion of divorce, the emergence of multi-partnered fertility, and the formation of step-families,

necessarily needed a male perspective as well (Goldscheider and Kaufman 1996; Forste 2002).

In the last decade, the interest in the role of male partners' characteristics on fertility resulted from the fact that in contemporary societies, parenthood implies parental investment from both women and men (Hobcraft and Kiernan 1995; Huinink and Kohli 2014). Women's participation in tertiary education has expanded to the extent that already, since the 1990s in many European countries, tertiary-educated women outnumbered tertiary-educated men (Vincent-Lancrin 2008). Van Bavel (2012) argued that this structural change in the composition of education-specific mating markets has consequences for fertility. Highly educated women tend to be more attached to the labor market than their low educated counterparts and, as a consequence, women, the highly educated in particular, may require men's active involvement in household work and childcare activities to engage in motherhood (McDonald 2000a; McDonald 2000b; Huinink and Kohli 2014). This implies that the timing and number of children a couple has is not confined to the decision of one of the partners but instead depends on both partners, who increasingly become more equally involved in the process of parenthood.

Low fertility rates have been, already for a long period of time, a concern for many European countries. One of the main reasons for being concerned is that persistent very low fertility, in most cases, will affect the age structure of the population, which will have short-, medium-, and long-term consequences for wellbeing in general (McDonald 2013). According to McDonald (2000a; 2000b), relatively high fertility, i.e., fertility rates that tend to be close to replacement level, and the stability of unions are a by-product of an equitable family model, characterized by gender equality at a macro-level (e.g., the same proportion of women and men in the labor market, educational systems, politics, and institutional powerful positions), which goes along with gender equity at a micro-level (e.g., women and men being equally involved in family duties and equally satisfied by the couple's division of unpaid work).

Building on McDonald's work, several scholars have re-theorized about the role of gender egalitarianism as a booster for fertility. According to Esping-Andersen and Billari (2015), European countries are experiencing a transition from the Becker equilibrium, characterized by a gender division of paid and unpaid work (i.e., where the male-breadwinner model prevails), towards the gender-egalitarian equilibrium. In the latter case, gender egalitarianism diffuses in society, i.e. it becomes a social norm in both the public and the

private sphere. This transition from one equilibrium to the other, however, is characterized by the coexistence of the two within a society: very low fertility and raising income inequality are outcomes of a *multiple equilibria* phenomenon (Esping-Andersen 2009).

Goldscheider, Bernhardt and Lappegård (2015) suggest that the changes that occurred over the last two decades of the twentieth century and the first decade of the twenty-first century can be framed within the "Gender Revolution Theory." According to the authors, the Gender Revolution has two stages. In the first stage, women's life course dramatically changes due to their increasing participation in the public sphere, i.e., educational systems, the labor market, and political institutions. Among the outcomes of this change, we observe the increasing age at union formation, postponement of childbearing, and increasing divorce rates among the more highly educated and career-oriented women. In the second stage, the widespread and socially accepted idea of women as achievers in the public sphere gives space to changes in men's life courses. Men increasingly become involved in housework and childcare, expanding the role of father beyond that of breadwinning. According to the authors, the observable outcomes of the completeness of the Gender Revolution are the rebound of fertility rates, increasing stability of unions, and decreasing divorce rates.

All these frameworks that consider gender egalitarianism the key to enhance fertility to the replacement level have had also a positive effect on increasing the interest toward the role of male partners in fertility studies. According to these theoretical approaches, the relationship between education and fertility represents a sort of indicator of the changes that occurred and of those that will occur, i.e., increasing involvement of men in the private sphere. Education shapes gender relationships within the family and also represents a dimension where social inequalities may be enhanced or reduced. Remarkably, empirical evidence on the relationship between education and fertility is mostly based on findings concerning women's life course, whereas the male side of the story is lacking. In particular, gaps in research concern: (1) the effects of men's educational characteristics on fertility; and (2) the effect of education-specific mating processes, i.e., the way partners combine their education, on fertility outcomes. In sum, fertility studies have disregarded the role of male partners and how the process of selecting a mate with given characteristics may affect fertility. This project aims to fill these gaps, contributing to our understanding of men's fertility behavior, which could not be achieved if considered in isolation from those of the female partners (Bledsoe, Lerner and Guyer 2000; Goldscheider and Kaufman 1996; Toulemon and Lapierre-Adamcyck 2000).

Considering how women's life courses have changed, the consequences unavoidably also impact men's life courses. Fertility studies will benefit from such an extended perspective, which accounts for the role of male partners since, expectedly, men's intentions, preferences, and characteristics weigh at least as much as those of their partners in fertility decision-making. Given that gender egalitarianism has become an important feature, we suggest that the processes of individuals' entering into a union and with whom they mate affect the fertility outcomes of men, women, and couples in general. As a result, the non-random sorting of partners (assortative mating) and the fertility patterns related to it may become a source of inequality in society at large.

Aim of the study and research questions

The contribution of this thesis consists in investigating the effect of education-specific mating processes on fertility, at both the individual and couple levels. We want to explore gender-driven mechanisms in social reproductive behavior, acknowledging contextual variation. The project will be developed both from theoretical and empirical points of view.

The theoretical framework is based on mechanisms that explain the relationship between educational characteristics and the fertility of men and women. Further, we explore how those mechanisms combine in order to hypothesize upon the fertility outcomes of couples. The scheme in Figure 1 highlights the two levels of analysis: 1) the individual level above the line, which concerns the effects of women's and men's education on union formation and parenthood; and 2) the couple level below the line, which accounts for the role of educational assortative mating on fertility. Following the scheme in Figure 1, the empirical study is divided into two parts. The dyadic articulation of the project is based on two fundamental research objectives: the first one is to uncover mechanisms that link men to the process of fertility, whereas the second one is to uncover the role of the interaction between partners' educational endowment on fertility.

The first part aims to contribute to the literature by primarily uncovering the role of men's education in the transition to fatherhood. Next, we will also focus on men's higher order births. Overall, results about the relationship between education and women's fertility have been quite consistent regarding the fact that schooling enrollment delays the transition to motherhood (Blossfeld and Huinink 1991; Sobotka 2004). The relationship between women's education (attainment and field) on higher-order births, however, is less clear-cut, often due to selectivity effects and the role of partners (Kreyenfeld 2002). For men, the effect of education

(attainment and field) on the transition to fatherhood and higher-order births has been almost overlooked; the mechanisms linked to the educational gradient of men's fertility in low-fertility settings are still nebulous. The main idea within this project is that the inconsistency found so far is driven by neglecting the role of men's education for their selection into union. In order to disentangle the relationships between education, transition to fatherhood, and union formation, we ask the following research questions:

1. How does education affect the transition to fatherhood? Is the effect of education on the transition to fatherhood related to the effect of education in men's transition to union? *[Chapter 1: "Education and the transition to fatherhood: the role of selection into union"]*

In the same part of the thesis, we look at gender differences in the role of education on fertility. By extending the project to another dimension of education, the field of study, we compare the fertility trajectories of men and women, aiming to answer the following research questions:

2. Are there gender differences in the effect of education on fertility? Is the effect of earning potential by type of field the same for men and women? Does the gender composition of the field of study matter for men's and women's fertility trajectories? *[Chapter 2: "Gender differences in the effect of education on fertility"]*

Separately studying women's and men's fertility gives us an incomplete picture of the impact of education on fertility. Partnership formation, in general, and educational assortative mating, in particular, may play a role in shaping fertility, both for women and men; the effect of their own education on fertility may also depend on their partner's education. In fact, in the second part of the dissertation, we move forward considering the couple as the main unit of analysis.

Studies on couples' fertility behavior have been a growing research field since the 1990s. Some of those studies focused on the fertility intentions, preferences, and desires of partners, with a special focus on the fertility decision-making process (Thomson 1990; Thomson 1997; Jansen and Liefbroer 2006; Bauer and Kneip 2013; Stein, Willen and Pavetic 2014; Testa, Cavalli and Rosina 2014). Other studies have focused on the socioeconomic characteristics of the partners and their effects on fertility outcomes (Corijn, Liefbroer and de Jong Gierveld 1996; Kreyenfeld 2002; Gustafsson and Worku 2006; Kreyenfeld and Konietzka 2008; Vignoli, Drefahl and De Santis 2012; Begall 2013; Jalovaara and Miettinen 2013). We will

develop the latter strand of research by combining male and female characteristics to define the couple-level variables.

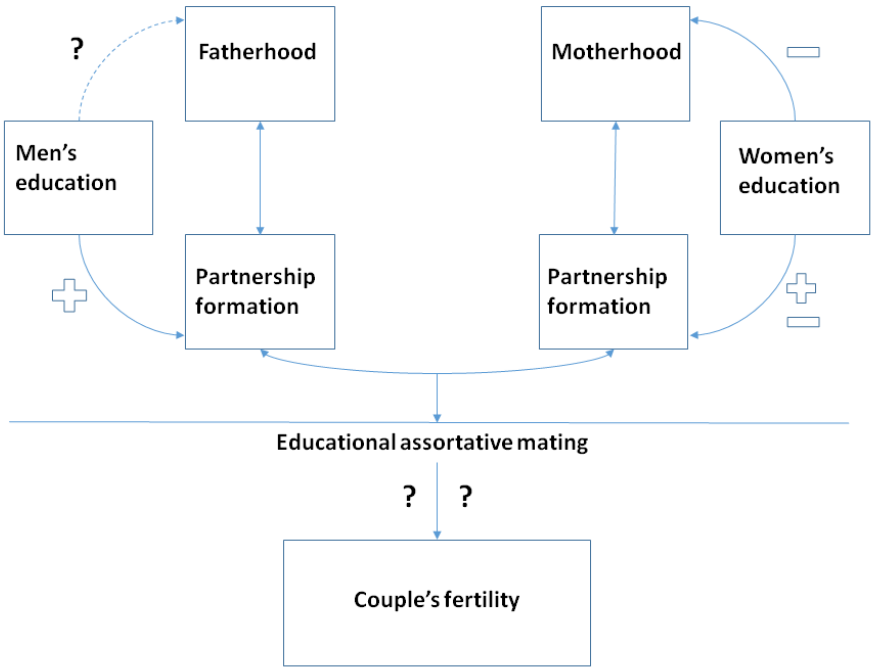
The first topic builds on the work of the previous chapter (2) about gender differences in the effect of education on fertility. The main contribution of this study is to analyze the role of pairing by partners' levels of education and earning potential of the field of study on the transition to first- and higher-order births, keeping a couple-level perspective. We will address the following research questions:

3. How does the educational pairing by level of education and earning potential affect the transition to first- and higher-order births? Does the effect of pairing by level of education differ from the effect of earning potential? *[Chapter 3: "Educational assortative mating and couples' fertility"]*

Finally, given the increasing relevance of non-marital childbearing, we chose to focus on another fertility outcome: the transition to a first non-marital birth. By keeping into account the marital history of the couple, we analyze three sub-processes and how they are related to educational assortative mating: the transition from cohabitation to marriage; the transition to first non-marital birth; and the transition to first marital birth. We address the following questions:

4. Does the educational pairing affect the transition from cohabitation to marriage and the one from cohabitation to first birth in the same way? How does the educational pairing affect the risk of non-marital first childbirth? *[Chapter 4: "Pathways to marital and non-marital first birth: the role of his and her education"]*

Figure 1 Theoretical scheme



A gender perspective on the linkages between education and reproduction

The link between education and fertility has been a long-standing research interest in family demography, since education is considered an important *indirect* determinant of fertility behavior (Bongaarts 1978). Education has ambivalent aspects; it is strongly associated with occupational success and also reflects cultural resources that influence individuals' preferences for specific partners and family pathways in general (Basu 2002; Blossfeld and Timm 2003).

Studies in family demography have mostly focused on the relationship between education and union formation (marriage in particular) and/or fertility. Scholars have been interested on how women's educational characteristics (e.g., enrollment, attainment, and field of study) affect childbearing behavior in terms of the likelihood to remain childless and the timing of births (Balbo, Billari and Mills 2012; Tesching 2012). In the following subsections, we discuss the main theoretical perspectives that have been used by scholars to approach the

study of education (broadly speaking) and fertility. This overview will keep a gender perspective, which is in line with the research questions of this dissertation.

The economic perspective

The economic perspectives introduced in this subsection will be present throughout the development of this project, since most of the hypotheses that will be formulated in order to answer our research questions, both on the individual and couple-level analyses (i.e., above and below the line of Figure 1), stem from the assumptions of micro-economic theories of the family.

The framework of the New Home Economics applies micro-economic theories to family behavior, and Gary Becker is one of the main exponents who contributed to the development of this theoretical approach. Family members are assumed to be rational decision-makers who allocate their resources, i.e., income and time, in order to maximize the total utility of the household, given preferences that are assumed to be homogenous and stable (Becker 1991). Within a household, partners allocate their resources between household chores and labor market jobs and they specialize for efficiency reasons. The specialization strategy increases the interdependency between the partners and then creates the gain to marriage.

An assumption of the New Home Economics is that men and women have different comparative advantages in household and market activities, and therefore marriage may be seen as a contract between the sexes. Women trade their "expertise" in household activities, whereas men trade their income and market activities. This sort of labor division between sexes has been addressed as the male-breadwinner model. With increasing women's human capital and participation in the labor market, however, the male-breadwinner model has eroded. According to the New Home Economics, increasing women's economic independence decreases the gains to marriage, leading to increasing divorce rates and, as an indirect consequence, the demand for children decreases.

Economists distinguish two types of mechanisms that drive the relationship between education and the demand for children: the income effect and the price effect. The income effect accounts for the fact that the most educated people are more likely to afford the monetary costs of having more children because they tend to have a higher income than low educated people. The price effect, on the other hand, acts through opportunity costs: highly educated people have higher opportunity costs because they may renounce part of their (generally high) income to devote time in unpaid market activities, mainly childcare and household chores, once they have a child.

These considerations led Becker and colleagues to predict different associations for men and women between education and fertility. The price effect characterizes the relationship between education and fertility for women, as the income effect does for men. Because highly educated women earn higher incomes than low educated women, reducing their working hours or leaving the labor market to devote their time to household activities would increase the opportunity costs, i.e., the earnings they renounce for an alternative occupation. In contrast, because men are more specialized in labor market activities and because they are not expected to spend time in household chores, being highly educated and having a higher income will allow them to afford more children. Note, however, that a higher level of education and earning potential are acknowledged to have ambivalent effects on fertility. The micro-economic theories also highlight that higher income is often associated with higher quality of children, i.e., the investments of parents in their children's economic wellbeing. A higher income may enhance the possibilities to invest on a child, which is also a reason to have fewer children (Becker 1991).

Extensions of the New Home Economics focused more generally on the timing of fertility (Happel, Hill and Low 1984; Cigno and Ermisch 1989; Heckman and Walker 1990; Gustafsson 2001). From these extensions, it clearly emerged that men's and women's earning potential differentially affect the timing of births. The optimal woman's age at first birth is estimated as a function of the man's earnings and it is considered optimal when these are the highest (Happel et al. 1984). According to Cigno and Ermisch (1989)'s theoretical model, a high man's earning profile would decrease the tempo of fertility and it also positively affects the investments on each child. Women's earning profiles are negatively related to the tempo of fertility (Cigno and Ermisch 1989). The higher the human capital of the woman, both in terms of education and work experience, and the steeper the career profile of the woman's occupation, the longer the couple would postpone a birth.

Heckman and Walker (1990), in their theoretical model, argue about the importance of considering heterogeneity in women's fecundity. The introduction of this element has been justified to account for the fact that (future) parents cannot fully plan and control the timing of their births, since the timing of women's pregnancy also depends on partners' fecundity (Heckman and Walker 1990). The role of unobserved heterogeneity helps to account for this uncertainty. The disadvantage of Heckman and Walker's approach is that they use male and female current wages without considering other measures that refer to the earning potential as lifetime earnings (Gustafsson 2001). In their economic model, women's earning potential is

treated as endogenous with the timing of a birth, whereas the husband's earning profile is treated as exogenous. Men's education does not appear since priority is given to men's actual earnings, which, however, also may incur endogeneity problems (Gustafsson 2001).

Men's earnings are not treated as endogenous because the economic perspective is based on the assumption that women are the sole party responsible for household activities and childrearing, whereas men are solely responsible for breadwinning. As a result, economic perspectives sustain that fertility rates have been negatively affected by women's increasing accumulation of human capital. As argued by Oppenheimer (1994), higher economic standards of living make the couples' specialization model inefficient. Men's economic ability to become a breadwinner may have been challenged during times of increasing inequality, which may also have favored the shift from the male-breadwinner model to the dual-earner family model (Blossfeld and Drobnič 2001).

Socio-cultural aspects

The social and cultural endowment of education is often seen as a competitive mechanism to explain the relationship between education and fertility. The changes in family behavior that occurred in the 1970s and onwards have been addressed as the "Second Demographic Transition (SDT)" (Lesthaeghe and Van de Kaa 1986; Van de Kaa 1987). Within this framework, socio-cultural changes, particularly the secularization and individualization of society, are considered important factors that led to increasing rates of divorce, cohabitation, and non-marital births.

Building on Maslow's theory of needs, proponents of the SDT assume that as long as the well-being of the population increases, the needs of individuals shift from the more materialistic, like survival security and solidarity, to more individualistic, like those based on self-realization, independence, and individual freedom. Namely, this framework tends to emphasize the changes that lie in ideational and cultural aspects. Post-materialist values, such as self-realization and individual autonomy, become more important in one's life. The child is not any more the center of the new household, but rather the couple itself: the motivation to become a parent is self-realization (Lesthaeghe and Surkyn 1988; Surkyn and Lesthaeghe 2004). The promoting of individual freedom correlates with increasing rebellion against authority, in particular religious authority, which accelerates secularization processes. In this framework, more highly educated people are believed to be the trendsetters of new behaviors, such as the diffusion of cohabitation and non-marital childbearing, acceptance of divorce, and abortion (Surkyn and Lesthaeghe 2004).

Rather than rebellion toward institutions and authority, the socio-cultural endowment of education is often associated with the fact that the more educated develop other interests, which leads far from a family-oriented life course (Rindfuss, Morgan and Swicegood 1988; Kravdal 2007). Longer periods spent in education may generate other *needs* in competition with family building processes. This perspective emphasizes the role of individuals' preferences for certain lifestyles, in line with Hakim's preference theory (2003), according to which women have pre-defined preferences that may explain their family outcomes.

Both the SDT and Hakim's theory have the peculiarity that they miss an important gender perspective. First, the SDT does not consider that values such as independence and autonomy gained more emphasis in women's lives rather than in men's lives, since for the former being economically independent from both their parents and their partners was a new achievement, whereas for the latter it was the norm (Bernhardt 2004; Goldscheider 2012; Goldscheider et al. 2015). Second, Hakim's theory of preferences focuses only on women; it is plausible, however, that men's preferences about family life are also heterogeneous. The definition of categories such as being "career-oriented," "adaptive," or "family-oriented" can become more insightful if it relates partners to each other. This may be done by studying how preferences regarding desired fertility vary with mating markets. A drawback of the preference theory is that it considers women's preferences as stable, but they may change over time because of defined circumstances and life experiences, since they are also in relation to partners' preferences (McRae 2003; Voas 2003).

The theme of preferences is strongly present in the literature about education and fertility and it is often indirectly addressed via the concept of *self-selection*. As already mentioned, individuals adjust their life course in order to fit their lifestyle preferences and family values (Hakim 2003; Surkyn and Lesthaeghe 2004). Several scholars have pointed out the role of self-selection processes with regard to both educational level and field of study (self-selection and the level of education, see Marini 1984; Billari and Philipov 2004; Martín-García and Baizan 2006; Kravdal and Rindfuss 2008; Martín-García 2009; self-selection and field of study, see Tesching 2012; Begall and Mills 2013; Opperman 2014).

The fact that people may self-select in a determined field of study (or may decide or not to continue with university) because they foresee their -normative- role in the family has been called the "anticipatory role" argument (Martín-García and Baizan 2006) or "family plan" thesis (Cech 2015). For instance, women who envisage their role as mothers would tend to choose fields of study that enhance compatibility between family and work (Martín-García

and Baizan 2006). Similarly, men who envisage their role as fathers would be more inclined to enroll in fields of study that allow them to have a secure job that can face the economic burden of children and related costs (Lappegard, Rønsen and Skrede 2011). As a consequence, both the choice of discipline and the fertility quantum and timing may be the result of interrelated processes, by-products of preferences, and personality traits (Hoem, Neyer and Andersson 2006a). However, it still remains unclear to what extent individuals make rational considerations by being completely informed about the future labor market characteristics of the field of study they chose or if it is rather the social environment that shapes inclinations towards certain roles. The "anticipatory role" argument seems to assume that women and men do not face any (social) constraints in accomplishing their pre-defined family ideal, since they make choices on the basis of full-informed cost-benefits trade-offs, even if this is not often the case (England et al. 1988; Okamoto and England 1999; Cech 2015).

A life course approach: reconciling economic and socio-cultural aspects

The interrelatedness of processes is a *forte* of the life course approach to fertility. Within this framework, the economic and socio-cultural aspects are complementary in *explaining* linkages between education and fertility, as we will particularly emphasize in the first chapter about the transition to fatherhood and the empirical part about the couple-level analysis.

The life course approach in the social sciences has been developed since the 1970s by Elder (1975; 1994). It builds on four conceptual pillars: 1) historical times, i.e., the role that cohort memberships have on explaining individual behavior; 2) the timing of lives, which is related to the social meaning of age and to the expectations about the timing of acquiring certain roles given beliefs based on age; 3) linked human lives, which acknowledges the role of networks, since individuals' behaviors affect each other; and 4) human agency, according to which individuals act given the opportunities and constraints that they have to face (Elder 1994). Each human life articulates in historical times, where the past affects the future but also where the individual is embedded in human relationships that are interlinked and interdependent across the life span.

Within the life course approach, Huinink and Kohli (2014) specifically focus on fertility. The authors emphasize the multilevel structure of one's individual biography and the multidimensionality of life domains, which are strongly interrelated and compete for individuals' resources, e.g., time. Each life domain (e.g., education, partnership, work, parenting, retirement) interacts within the same person's individual biography and

environment, leading to shifts in the timing and pathways in case of incompatibilities. The authors often refer to "life-scripts" in the sense that the life course is strongly institutionalized, given social norms and expectations. For instance, the expansion of education has contributed to the institutionalization of the life course, such as in the past where the consolidation of the male-breadwinner model was a common "life script", according to which men and women clearly knew their roles in society and within the family. A lack of *institutionalization* may lead to competing decisions about family-related events. In this case, preferences for one domain or the other drive the decision, and as a result self-selection processes become increasingly important (Huinink and Kohli 2014).

The authors try to expand their perspective by also referring to the role of men in fertility. The authors suggest that the nature of competing life domains have been changing for men too. The life domain of employment increasingly competes with the life domain of parenting, since men, in order to persuade their partners to have children, may become more involved in household activities and childrearing. As a result, the opportunity costs of fertility may also increase for men. The raise of opportunity costs for men may, in turn, enhance men's say on fertility-decision making, which makes women's and men's family building processes even more interlinked and "de-institutionalized." These expectations about the increasing role of men in fertility decisions are also in line with the theoretical arguments of Van Bavel (2012), who has seen in structural changes, i.e., changes in education-specific mating markets, the engine for considering the role of male partners in fertility behavior.

Thus, keeping the focus on fertility, one's individual life domains, which regard education, work, and leisure, become *interdependent* with life domains concerning the family. Once in a couple, however, the life domains of partners interact with each other and, as a result, not only are life domains interdependent for the individual but also intertwined with the other partner, becoming interdependent life domains. Huinink and Kohli (2014) suggest that postponement is more likely when both partners have to synchronize their employment careers. Still, a *synchronization* of partners' pathways may help in developing "shared goals", such as similar fertility preferences and family plans (Thomson 1990). The increasing institutionalization of domains like education and work leads to similar pathways and, plausibly, may enhance a homogenization of the socio-cultural endowment between (future) partners. It still remains unclear, however, to what extent and how this will impact the fertility behavior of the partners.

Educational assortative mating and reproduction

The last paragraph of the previous subsection has touched upon an important point relative to the similarities and differences in partners' characteristics, which is also a key feature in our couple-level approach. Prior studies on fertility focused on the characteristics of only one partner, typically the woman, by assuming that people often mate with individuals who share the same values and lifestyles (Corijn et al. 1996). People who mate homogamously mostly come from the same social background and followed similar educational paths or attended the same religious community (Kalmijn 1991; Blossfeld and Timm 2003).

A positive assortative mating with regard to education would imply an accumulation of advantages or disadvantages endowed in the level of education. The less educated may improve their social status by partnering with an individual more highly educated than him/herself. The degree to which this is possible depends on the level of social stratification in a society (Blossfeld 2009); a more stratified society will offer fewer opportunities to the more disadvantaged to improve their social status. As a matter of fact, homogamy in education is the most typical mating pattern across countries and indicates the level of accumulation of resources within the couple. The distribution of heterogamous couples, who are less typical, has been changing in the last few decades due to changes in education-specific mating markets. The reversal of gender inequality in tertiary education contributed to an increase of couples where the woman is more educated than her partner (Esteve, García-Román and Permanyer 2012; De Hauw, Grow and Van Bavel 2015; Grow and Van Bavel 2015).

The way partners combine their educational outputs may have consequences for fertility outcomes. To the extent that educational assortative mating is linked to differentials in fertility rates, there would be consequences for the widening of inequalities in societies too (Esping-Andrsen 2009). Since education represents an important dimension of the mating market, this implies that individuals also tend to sort partners out, indirectly, in terms of social background and cultural traits, which may shape fertility preferences and family behavior (Voas 2003). Partnering among the highly educated has different implications than partnering among the less educated. On one hand, committed relationships formed by the more educated may be characterized by a longer search for a suitable partner; more years spent accumulating human capital can better re-define what is considered an ideal partner (Oppenheimer 1988). Moreover, couples characterized by a higher level of education may show a more dual-earner type of family model, with a higher level of gender equity within the couple. On the other

hand, the less educated, despite homogamy, may be more inclined to traditional family models due to more traditional gender norms and attitudes, which are typically more diffused among the low educated social strata (Blossfeld and Drobnič 2001; Esping-Andersen 2009; Esping-Andersen and Billari 2015).

The study of educational assortative mating, however, cannot be reduced only to the level of education. As a matter of fact, a similar level of education between partners does not necessarily warrant similar life pathways. For instance, the choice of the field of study, given the level of education, implies different opportunities and constraints on the career path of each partner (Esping-Andersen 2009). The earning potential is also dependent on the field of study, as reflected by the gender wage gap (Blau and Kahn 2016). To the extent that pairings by level of education and fields of study entail differentials in fertility behavior (cf. Chapters 3 and 4), it will be necessary to reflect on the consequences of these factors for the reproduction of inequalities in society.

The European context

As mentioned above, this thesis exclusively focuses on the micro-level perspective; however, we are aware of the fact that a macro-level perspective enhances the understanding of family processes, given that contextual factors may influence micro-level behavior. In this section, we briefly describe some salient features of our context of analysis, i.e. Europe. Billari (2004:17), whose focus was on the transition into adulthood, noted that "Europe provides an extremely interesting setting to study the transition to adulthood. Cultural and institutional heterogeneity, economic differences and the interaction between them, have shaped an incredibly diverse way of becoming an adult in a demographic sense."

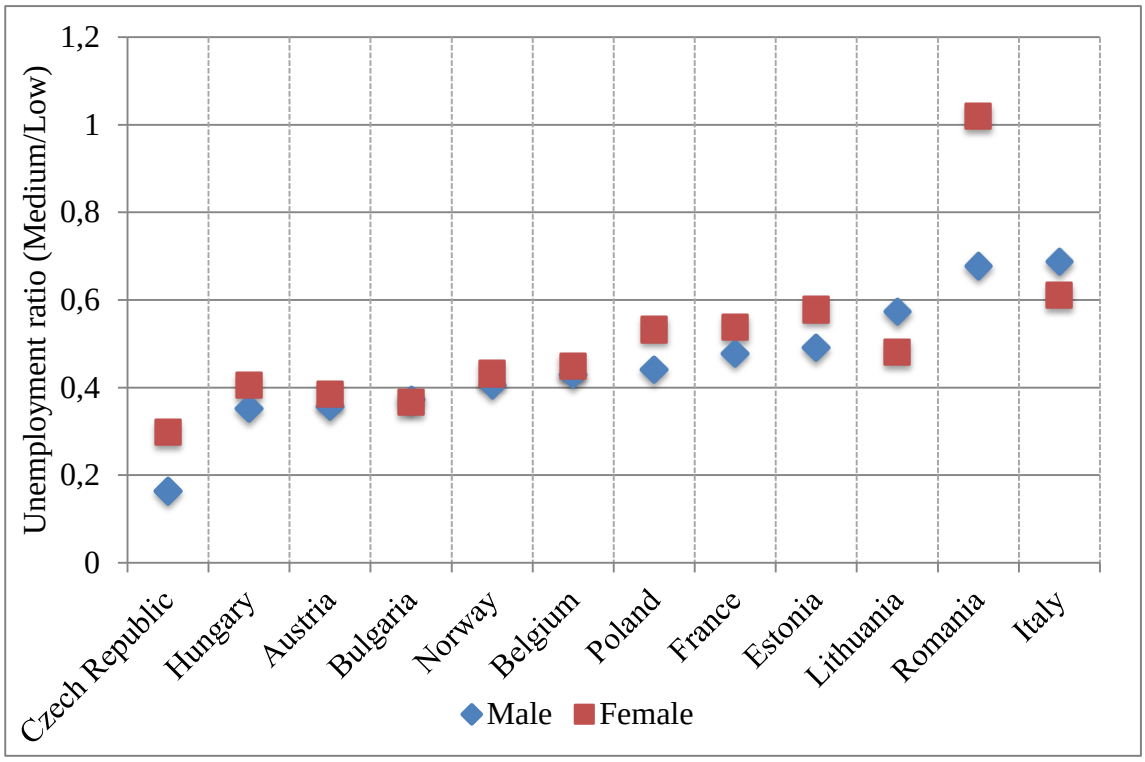
Balbo et al. (2012) identify several macro-factors that may explain the differentials in fertility behavior in advanced societies; following Billari (2004), the authors distinguish among cultural and economic determinants. In the literature on the effect of macro-factors on fertility behavior, a stream of research has emphasized the role of economic trends, socioeconomic policies, and welfare regimes, whereas another stream of research has focused on the influence of values, attitudes, and cultural aspects (Balbo et al. 2012). In this review, we focus on macro-factors, which will be often mentioned in this project and represent sources of heterogeneity across European countries: inequalities in education, gender inequalities, and welfare regimes.

First, as linked to the theoretical section above, we mentioned how education correlates with the socioeconomic resources of an individual. In Europe, the way education correlates with success in the labor market is linked to developments that occurred after the Second World War. The period after the Second World War was characterized by economic and political differences that separated European countries into two blocks: the capitalist, in the West, and the socialist, in Central and Eastern Europe. After the collapse of the socialist regimes in Central and Eastern Europe (by the end of the 1980s), the centralized socialist regimes were replaced with democracies and free-market economies.

The societal transition posed new challenges for family behavior in the ex-socialist countries: the emergence of new factors, such as competition in the labor market, job and housing insecurity, and rising cost of children, inflated the negative effects of the economic problems of these countries (Frejka 2008). The high level of job security for different strata of societies, which characterized the period before the shifting institutional setting, was replaced by a higher competition in the labor market. As a consequence, the value of higher education increased (Frejka 2008).

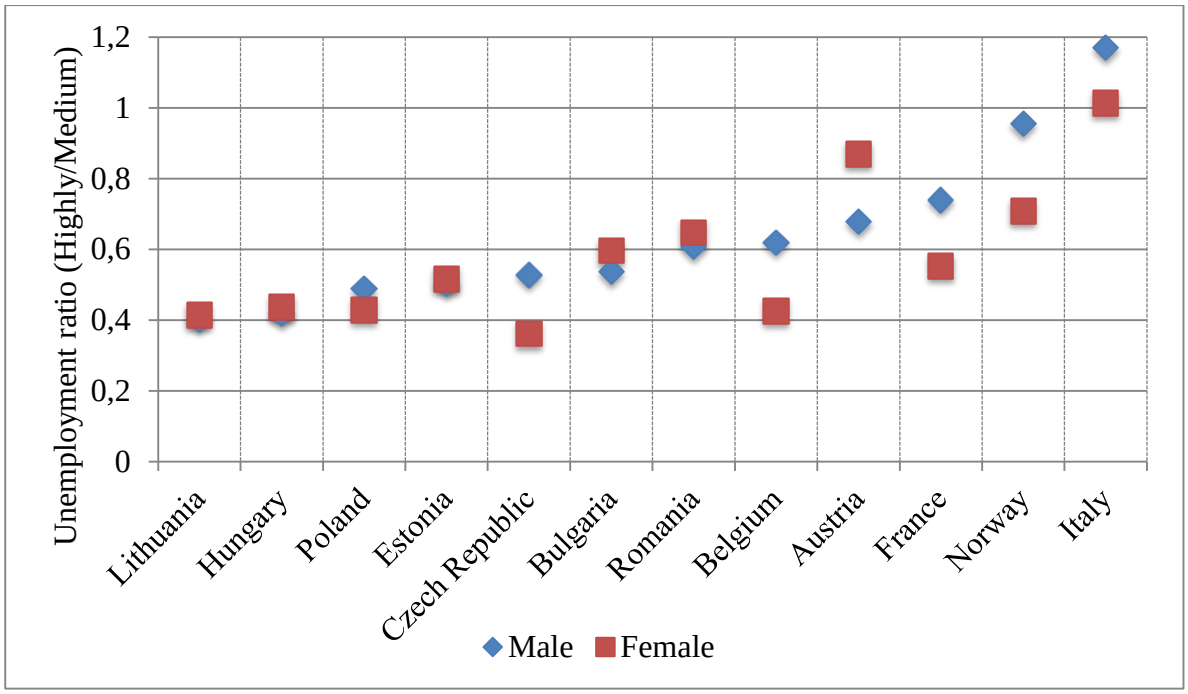
Despite convergence policies adopted by the European Union, socioeconomic inequalities in education exist across Europe. Figure 2 and Figure 3 show the ratio of unemployment rates by level of education of people aged 25-39 years old with medium/low education and highly/medium education, respectively. Overall, in almost all countries considered, the values stay below one, both for men and women, which indicates that unemployment rates tend to be higher for those with a lower level of education. While the differences between medium and low education are generally more similar across European countries, with regard to the differences between high and medium educations a country-gradient emerges. Looking at Figure 3, it seems that, especially for men, countries from Central-Eastern Europe cluster all together, whereas Western European countries (Austria, Belgium, France, and Norway) are more similar. In the latter group, inequalities in education seem to be a concern more for women than men. In general, the returns in education in terms of unemployment rates are similar between males and females. Focusing on Figure 3, however, we observe that in the Czech Republic, Belgium, France, Norway, and Italy, gender differences in inequalities of education are stronger. In those countries, it seems that the protective role of high education against unemployment is much stronger for women than for men, while the opposite holds for Austria.

Figure 2 Ratio of unemployment rates by medium and low levels of education of people aged 25-39 years old, selected European countries, years 1998-2015



Source: Eurostat database on labor market participation, EU-Labor Force Survey data
Note: We took an average of unemployment rates over the period of 1998 – 2015

Figure 3 Ratio of unemployment rates by high and medium levels of education of people aged 25-39 years old, selected European countries, years 1998-2015



Source: Eurostat database on labor market participation; EU-Labor Force Survey data
Note: We took an average of unemployment rates over the period of 1998 – 2015

Beyond socioeconomic differences, educational inequalities are relative to another dimension, i.e., gender. In the last few decades, most European countries have witnessed a reversal of gender inequality in education, given that women are more likely to successfully graduate in tertiary education than men (Vincent-Lancrin 2008). Recent findings showed that this reversal has had consequences for the dynamic of education-specific mating markets: more highly educated women are on the market compared to highly educated men, since at least the 1990s for many European countries (Grow and Van Bavel 2015). For some European countries, this trend has preceded the 1990s: in the Baltic countries, Bulgaria, Poland, and Norway, the sex ratio of people aged 25-29 years old in tertiary education favored women as early as the 1970s (cf. Van Bavel 2012:9). The author argues that these changes have far-reaching consequences for family behavior given that, in recent decades, if a difference in education exists between partners, it is more likely that the woman is more educated than the man. Klesment and Van Bavel (2015) showed that if the woman is more educated than her partner, it is often associated with the fact that she earns more than he does. The extent to which this holds also depends on the gender system in force in the country.

The socially constructed expectations for male and female behavior tend to prescribe a division of labor between women and men, which may create inequalities in power between the sexes (Mason 1995). Kalmijn (2013), using three items (women's labor force participation, the degree to which husband and wives share equally unpaid work, and attitudes towards gender equality) built an index that indicates the level of gender role segregation across European countries. Countries that showed more segregated gender roles were mostly represented among the Southern and Central-Eastern European countries, e.g., Italy, Spain, Greece, Poland, Romania, and Bulgaria. This is mostly related to the fact that, especially in those European countries, the time spent in care and housework activities is much higher for women than for men (European Institute for Gender Equality - EIGE 2015).

Cultural changes across and within countries regarding gender role expectations tend to take place slowly, and policies may often intervene to accelerate this process. The way family behavior at the individual level is affected by policies is usually addressed in the literature through the differentials in welfare regimes (Esping Andersen 1999; 2009). Country differences in terms of welfare regimes include three main features: (1) the degree of support to the strata of societies outside the labor market; (2) the degree and range of support to the family; and (3) supporting policies with regard to the active population and the share of the public sector among the active population (cf. Blossfeld et al. 2005). The first and third items

regard labor policies and taxation, which may help reduce social inequalities derived from education. The feature of a welfare regime that may more directly affect family formation behavior regards the second item, i.e., family policies. Family policies may act on the individual's family behavior at least in two aspects: (1) reducing the work-family incompatibility, e.g., improving childcare services; and (2) enhancing gender equity more broadly, e.g., implementing policies that favor men's involvement in extra-labor market activities (McDonald 2000a, 2000b).

Regarding family policies, European countries vary widely. The ideal policy type of Scandinavian countries corresponding to the social-democratic welfare regime aims at full employment, gender equality at work and in the house, and low levels of income inequality (Esping-Andersen 1999; Blossfeld et al. 2005). In contrast, the familialistic welfare regime, typical of Southern European countries, reinforces the traditional work-care models, based on women as the main caregivers and household keepers; as a result, women's employment in these countries is amongst the lowest across Europe (cf. European Commission 2015). These two ideal types represent opposite poles in the European panorama of family policies practices. Within this context, the European Union has an important role in aiming to reduce gender inequality by setting standards for women's employment, giving directives and guidelines about family-related policies (cf. Thevenon and Neyer 2014). Such kinds of convergence measures may enhance the diffusion of gender egalitarianism as the norm in society, which will eventually have those positive effects on fertility that many scholars expect in the future (Esping-Andersen and Billari 2015; Goldscheider et al. 2015).

Empirical design

In this section, we highlight in more detail the empirical approach that characterized this thesis project. The first subsection focuses on the reasons behind the choice for a multi-country design. Secondly, we describe the data chosen for this project, with particular focus on the Generation and Gender Surveys (GGS) data. Finally, we briefly explain the applied methodology, which mostly relies on the advanced methods of event history analysis used in the field of demography.

Multi-country approach

This project focuses on countries that are part of the European Union. We chose a multi-country approach to assess the sensitivity of our hypotheses to different contexts and expand the generalizability of our results to additional contexts since inter-country differences exist in

the European Union. A case-study approach would have provided an in-depth examination of the national context; however, it would have been difficult to directly assess the role of structural factors on individual behavior, since the varieties of factors that characterize a society are usually interdependent. Next, a case study approach limits the generalization of results, which are necessarily specific to one country.

It must be emphasized that the aim of this project is not to explain contextual differences, but rather to explore cross-country variation and improve the generalizability of the results. For this reason, we do not follow a multilevel approach, nor did we choose the countries by following a standard criteria (e.g., East vs. West; North vs. South; Conservative vs. Democratic; Egalitarian vs. non-Egalitarian). The selection of countries based on special criteria is troublesome, since there are usually many other between-country differences that could affect the interpretations of findings beyond the factors chosen to select the countries (Yu 2015). Moreover, the different macro-level factors that characterize a group of countries may actually have different impacts on individual behavior (cf. Gornick et al. 2003 about potential negative outcomes of generous maternity leaves on women's labor force participation). In the next section, we delineate the characteristics of the main dataset that we used in order to keep a multi-country design; the selection of countries is detailed in each empirical chapter, since the group of countries that was analyzed varies according to the availability of the data.

The data: Generation and Gender Surveys

The main dataset used for this dissertation comes from Wave 1 of the Generation and Gender Surveys (GGS). The GGS are part of a wider program whose aim is to improve the knowledge of the macro and micro factors that affect the relationships between generations and between genders (http://www.ggp-i.org/). The surveys, which include individuals between 18 and 79 years old, deal with different topics, such as: fertility and partnership histories, the transition to adulthood, economic activity, care duties, and attitudes. The GGS are the most recent available large-scale panel and internationally comparable demographic surveys available to date; the GGS are characterized by an independent sample of men and women that were interviewed separately. The other available European surveys (European Labor Force Surveys, European Union Statistics on income and living conditions, European Social Surveys) lacked fundamental information, i.e., detailed partnerships and fertility trajectories, that was useful to answer the research questions of this thesis.

Each country developed the survey independently, following the guidelines of the Generation and Gender Programme. Fokkema and colleagues (2016) offer an overview of all the specific sampling designs and fieldworks. In general, the GGS have relatively high response rates, over 60% for many countries, except for Belgium, Lithuania, and the Czech Republic, with response rates of 42%, 36%, and 49%, respectively. The main reasons for these lower response rates compared to the other countries were the difficulties in contacting the sample units and, if contacted, the unwillingness to cooperate (Fokkema et al. 2016), so caution is needed in particular for those countries.

Overall, GGS data are suitable to study fertility, especially for cohorts born after the mid-1940s and for periods after the mid-1970s (Vergauwen et al. 2015). Alich (2009), focusing on Russia, showed that GGS male fertility data are also reliable. One of the main goals of the Generation and Gender Programme was to collect information about partnership and fertility histories for both women and men. Studies focusing on men's fertility showed that if children do not co-reside with the father because of union dissolution, men may underreport their non-co-residential children (Toulemon and Lapierre-Adamcyk 2000; Joyner et al. 2012). Alich (2009) suggested that the setup of the GGS questionnaire may have been organized in a way that facilitates recalling and limits the likelihood of underreporting male fertility. The fact that fertility and union histories were connected may have improved recalling. Moreover, information on child allowances and support was requested in a separate section, which seems to be a good device to limit underreporting by men (Lindberg et al. 1998).

With regard to union histories, the date of first partnership formation has been coded using information on the month and year of the first co-residential partnership. If the respondent answered positively to the question "Have you ever before lived together with someone as a couple or have you ever been married?", then the first partnership coincides with "partner 1" of the partnership history grid and so on for higher-order unions, till the current one at interview. If the answer was negative, the first co-residential partnership coincides with the co-residential partnership (if any) at the moment of interview. In general, we could distinguish if the partnership started as an un-married cohabitation or as a marriage. In case the couple made the transition from cohabitation to marriage, we also have information on the date of the marriage. The GGS surveys collected information only on partnerships that lasted for at least three months (Vikat et al. 2007).

Concerning the main independent variable, educational attainment, GGS do not provide the entire educational trajectory; however, it was still possible to obtain information regarding

the highest level of education by combining the questions: "What is the highest level of education you have successfully completed?" and "In what month and year did you reach that level?". In Chapter 2 and Chapter 3, we also consider an additional dimension of the highest level of education, the field of study, via the open question "What was the main subject matter of these studies?". The harmonization of the field of study has been done by following UNESCO guidelines (UNESCO 2014). Further details about the data and methods used will be given in each empirical chapter.

Analytical strategy

In this dissertation, the main technique applied is event history analysis and its advancements. Since the 1970s, the theoretical framework based on the life course approach has often been combined with survival analyses methodology. The enhancements in data availability with regard to retrospective and longitudinal data, which give information about the time of occurrence of the events under study, have contributed to the diffusion and improvements of event history techniques.

Event history analysis is an adequate method to study the events that occurred during the life history of an individual (e.g., enrollment in education, employment, union formation, migration, parenthood, and retirement); the occurrence of these events marks the transition from one state of the life course to another (Blossfeld, Golsch and Rohwer 2007). Transition rate models estimate the effect of the time constant and time-varying covariates on the occurrence of an event, taking into account censored data.

The focus of this thesis is on fertility trajectories. In two chapters (1st and 4th), the main event of interest is the transition to parenthood, i.e., transition to first birth, whereas in the other two chapters (2nd and 3rd), we also focus on the transition to the second and third births. The entity of interest in survival analysis is the hazard rate, which, in its continuous-time specification, is described by the following formula:

$$h(t) = \lim_{\Delta t \to 0} \frac{P(t \leq T < t + \Delta t \mid T \geq t)}{\Delta t}$$

The numerator represents the conditional probability of experiencing the event of interest in the interval of time between *t* and *t +Δ t*, given that the individual survived at least till time T, i.e., did not experience the event, whereas the denominator is the variation of a small interval of time. The different types of hazard analyses vary according to the specification of

the time dependence, which can be left unspecified, like in Cox models, or it can be parametrically specified. In the last case, the tricky task is to find an adequate parameterization. Here, we applied a very flexible approach, i.e., a piecewise linear specification of the hazard (also known as a generalized Gompertz), which assumes a multiplicative effect of covariates on the baseline hazard (proportional hazard models, cf. Lillard and Panis 2003).

Extended event history models take into account the problem of unobserved heterogeneity, i.e., those factors that are not available in the data. This kind of omission leads to a misspecification of the model that can bias the hazard estimates; for instance, underestimating the effect of some covariates or biasing the duration dependence. In this thesis, unobserved heterogeneity will be taken into account, especially when we examine different correlated events for the same individual.

Accounting for unobserved heterogeneity means to account for compositional changes, which are driven by selectivity that occur in the population at risk during the observation period. Because selection occurs over time, individuals in higher risk groups tend to experience the event of interest earlier, and consequently, they will be those who live the risk set first (Vaupel and Yashin 1985). With the passing of time, the population of survivors will look like less similar to the original population; in fertility analysis, this would be the case if there is substantial heterogeneity in fecundity.

The inclusion of the unobserved heterogeneity term prevents biases due to the non-proportional behavior of some covariates, which is the result of changes over time of the population at risk (Kleinbaum and Klein 2006). For instance, low educated women experience first birth at an earlier age than highly educated women, so that they will leave the population earlier in time. However, if the low educated group is not homogenous itself, we will observe a convergence of hazard rate (or even a cross-over) over time between the less educated and the highly educated, because those low educated people with a slower transition to first birth will be more similar to the highly educated group.

All these models, which include an unobserved heterogeneity term, were estimated by means of aML software. aML uses full information maximum likelihood, which consists in an iterative search algorithm where the parameters for the first iteration need to be specified by the user (Lillard and Panis 2003). The selection of starting values is important in order to minimize the time of estimation and to enhance convergence: we started by specifying the simplest model and then updating the starting values each time we added an explanatory

variable, until we developed the more complex version. Identification of these kinds of models is more easily reached in case the user deals with repeatable events (e.g., births). In contrast, it is more troublesome in cases of non-repeatable events, and it is necessary to make additional assumptions about the random effect, i.e., the unobserved heterogeneity term (cf. Chapter 1).

Structure of the thesis

As mentioned above, we have articulated this thesis in two empirical parts. Each part is constituted of two chapters, and in turn, each chapter has been written in a format of journal article, i.e., each chapter has its own introduction, theoretical background, data and methods, results, and discussion sections. At the end of each chapter, we have included the Appendices, whereas the reference list can be found after the conclusion chapter, at the end of the thesis. Note that Chapters 2 and 3 share Appendix 2.A, which concerns the estimation of the earning potential by field of study.

Overview of empirical chapters

Chapter 1: How does education affect the transition to fatherhood?

In this chapter, we hypothesize that men's educational attainment consistently and positively affects the transition to fatherhood via higher rates of union formation. In order to test this hypothesis, we apply multi-process event history analysis, which accounts for the correlation of unobserved factors between the process of first birth and the process of first union.

We used data from the Generations and Gender Surveys for 10 European countries. Our results show a consistent positive effect of education on the transition to fatherhood, but it operates chiefly through selection into union. Failing to account for this selection process leads to a major underestimation of the salience of education for the transition to fatherhood.

Chapter 2: Are there gender differences in the effect of education on fertility?

The aim of this chapter is to test micro-economic theories of the family, according to which the relationship between education and fertility differs for men and women. We contributed to the literature about the role of education for men and women in fertility by particularly focusing on the effect of earning potential and gender composition of the study discipline, as well as the level of educational attainment.

We used the GGS data of eight European countries (1960-1987 cohorts) that collected information on the field of study, i.e., Austria, Belgium, Bulgaria, the Czech Republic, France, Lithuania, Poland, and Romania. We used European Labor Force Survey data to

estimate the earning potential of study disciplines and Eurostat data to calculate the share of women within each field of study. Next, by means of event history analysis, we modeled jointly the transition to first, second, and third births for women and men in order to take into account the process of selection into parenthood, which may affect the result concerning higher order births.

Our results show that the effect of educational attainment differs between genders, mainly with regard to the transition to first birth, and that an important role is played by the selection into union in line with the findings in Chapter 1. The earning potential by field of study, instead, similarly affects all parities for men and women, i.e., a higher earning potential is associated with lower birth rates. Effects on births beyond the first child appear to be more similar between genders than expected.

Chapter 3: How does educational pairing affect couples' fertility?

Building on the work that we did in Chapter 2, this study aims to extend the literature about the effect of partners' educational characteristics on fertility, i.e., including the level of education and the field of study. We have used the country- and sex-specific estimates of earning potential by field of study to account for the earning potential of the partners. With GGS data of eight countries, the same that we used in Chapter 2, we modeled couples' transition to first and higher order parities jointly, accounting for couples' unobserved characteristics.

The findings suggest that both men and women face opportunity costs between fertility and increased earning potential in terms of both higher educational level and more profitable field of study. Overall, we found that traditional pairings, characterized by an imbalance of education and earning potential in favor of the man, are more conducive to fertility than non-traditional pairings, i.e., where the woman is more educated than the man. However, highly educated women partnered with highly educated men tend to have a higher transition rate to second birth, compared to highly educated women who partnered with man lower educated than themselves.

Chapter 4: How does educational pairing affect the pathways to couples' first birth?

In this last chapter, we focus on non-marital childbearing. In analyzing the factors associated with childbearing outside marriage, scholars tended to focus on the characteristics of only one of the parents, typically the mother. Given that the majority of non-marital births occur within unions, we considered a couple approach to study non-marital transitions to first birth.

By means of a multistate approach, we examined the connection between educational pairings and the occurrence of the first birth inside or outside marriage for 12 European countries. Overall, we found that the presence of at least one highly educated partner lowers the rate of non-marital first births, relative to first childbearing within marriage, a finding which holds across all the countries considered. Strikingly, it does not matter whether it is he or she who has the highest level of education.

PART I. Individual-level analysis

Chapter 1. Education and the transition to fatherhood: the role of selection into union

Abstract

While advanced education has been found to be consistently associated with a later transition to parenthood for women, findings about education and the transition to parenthood have been much less consistent for men, and no stylized fact has emerged from the literature. We argue that the inconsistency of findings for men is due to the fact that the selection process involved in union formation has been disregarded in earlier studies. We hypothesize that men's educational attainment consistently and positively affects the transition to fatherhood via higher rates of union formation. We apply multi-process event history analysis to data from the Generations and Gender Surveys for 10 European countries. Our results show indeed a consistent positive effect of education on the transition to fatherhood, but it operates chiefly through selection into union. Failing to account for this selection process, leads to a major underestimation of the salience of education for the transition to fatherhood.

Keywords: fatherhood, union formation, education, selection

Introduction

A major fertility trend of the past decades in the West has been the postponement of parenthood. Chief explanations of postponement include the expansion of women's enrollment in advanced education and their increased participation in the labor market. More highly educated women, who are also more likely to be active in the paid labor market, tend to make the transition to parenthood at a later age than their lower educated peers – even if the former often catch up at later ages (Sweeney 2002; Sobotka 2004; Mills et al. 2011).

The role played by men's education in the transition to parenthood has received much less attention. It is high time to focus on the role of men's education because major changes have taken place in the relative education of men and women. While men were typically more educated than women in the past, the gender gap in education has turned around in most Western countries. In recent years, the number of highly educated women reaching the reproductive ages is exceeding the number of highly educated men (DiPrete and Buchmann 2006). This has affected educational assortative mating: while educational homogamy remains dominant, wives' education now typically exceeds husbands' (hypogamy) in case of differential attainment, whereas the reverse (hypergamy) has always been true in the past (Schwartz and Mare 2005; Esteve et al. 2012; Grow and Van Bavel 2015). This reversal has potentially far-reaching consequences for family formation (Van Bavel 2012).

Parenthood implies parental investments and resources from both women and men. The decline of the male breadwinner–female homemaker model has turned obsolete the "separate spheres" argument for focusing only on women's characteristics. Women's increased earning potential and activity in the labor market may put pressure on men to be more actively involved in household work and childcare activities (McDonald 2000b; Sweeney 2002; Huinink and Kohli 2014). Both partners may become more equally involved in daily parenting activities. As Martín-García (2009:200) points out: "fatherhood no longer means being the only breadwinner of the household, it demands more time and more active role in childcare than ever before". In this context, education plays an important role in shaping gender relations in family formation processes, as well as gender relations in established households (Martín-García 2009; Van Bavel 2012; Carlson, VanOrman and Pilkauskas 2013; Goldscheider, Bernhardt and Lappegård 2014).

So far, the findings about the effect of men's education on the transition to parenthood have been inconsistent. We argue that this is because earlier studies of men's education and family formation have typically looked at it either in the context of an established couple or

without simultaneously considering the education of the female partner. Studies investigating fertility from the couple's perspective fall into the first category (see, e.g., Corijn et al. 1996; Vignoli et al. 2012; Begall 2013; Jalovaara and Miettinen 2013). A limitation of such studies is that they suffer from selection bias: since only partnered men are analyzed, these studies lose sight of how some men are selected into unions while others are not. The second type of studies that have looked at the effect of male characteristics do not suffer from this bias, but at the expense of failing to control for the effect of female characteristics. In the literature about the transition to adulthood, scholars have investigated the effect of education both for men and women, but in order to be able to include singles, the effect of the partner's education had to be left out of the equation (Corijn and Klijzing 2001; Billari and Liefbroer 2007). Such study design fails to account for strong educational homogamy and, as a result, one cannot tell to what extent the estimated effect of his education really reflects his rather than her education.

In this paper, we propose to combine the advantages of both approaches, namely to include both single and partnered men while taking into account the education of the female partner, if any. We do this by simultaneously modeling union formation and the transition to parenthood as two interrelated processes. We hypothesize that men's education has a consistent and positive effect on fatherhood rates, but that this acts chiefly through the process of union formation: men with higher educational attainment tend to be more attractive on the mating market and therefore exhibit higher rates of union formation. As a result, they also exhibit higher fatherhood rates. If only men with a partner are considered – after the selection effect has played out its role – the effect of his education on top of the effect of the wife's education becomes much more uncertain, which is why estimates from couple-level studies may be inconsistent. Within couples, it is typically the wife's education that plays the first violin when it comes to fertility outcomes.

In order to test the selection-into-union hypothesis for men, we fit a multi-process model to account for the endogeneity of union formation and parenthood. So far, the literature considering the endogenous relations between family events has mostly focused on women's characteristics (see e.g., Brien, Lillard and Waite 1999; Baizan, Aassve and Billari 2003). To date, there is a lack of studies focusing on the link between men's education and the transition to fatherhood, and the relationship between union formation and fatherhood. This paper aims to fill that gap. We replicate our multi-process model in 10 different European countries, using data from the Gender and Generations Surveys (GGS), to explore the sensitivity of our

hypothesis to different European contexts. Our findings do indeed show consistently positive effects of education on the transition to fatherhood in diverse European contexts for men, but they operate mainly through union formation.

The following sections discuss theoretical insights about the relationship between men's education and family formation and then review lessons learned from earlier empirical studies. Next, we explain more about our empirical strategy and report on our findings.

Education and men's family formation

Given the multidimensional nature of education, education may affect union formation and the transition to parenthood through several mechanisms (Lappegård and Rønsen 2005; Kravdal and Rindfuss 2008; Van Bavel 2010; Tesching 2012) which may differ between women and men. Two types of economic mechanisms are usually distinguished that relate education and fertility: the positive income effect and the negative price effect. The income effect accounts for the fact that the more educated people tend to earn a higher income and they are therefore more likely to afford the monetary costs of having (additional) children. The price effect, on the other hand, acts through opportunity costs: highly educated people have high opportunity costs because they have more to lose when they have to devote more time to non-paid activities like childcare and household chores after becoming a parent (Becker 1991).

In the male breadwinner model, opportunity costs predominate for women while the income effect is more important for men. In this model, the expected educational gradient in union formation and fertility is negative for women and positive for men, since the opportunity costs of family formation are larger for college educated women while the positive income effect predominates for their male peers. Even before graduating, women have more difficulty to balance the role of wife/mother with that of student, so the negative effect of educational enrollment is expected to be stronger for women than for men (Blossfeld and Huinink, 1991; Liefbroer and Corijn 1999).

To a large extent, the male breadwinner model has now given way to a dual earner model (Sweeney 2002). Since the last decades of the twentieth century and the first decades of the twenty-first, gender inequalities at macro and micro levels have changed. In education, the gender gap has reversed: since about the 1990s, in most of the OECD countries, female enrollment in college level education exceeds male enrollment, and women also complete their education more successfully (Vincent-Lancrin 2008). Female labor market participation

has increased dramatically and, to a much lesser extent, men have also become more involved in household chores and childcare (Oppenheimer 1994; England 2010; Raley, Bianchi and Wang 2012). Women's earnings in the labor market are increasingly considered an essential part of the family budget (Oppenheimer 1994).

When the dual earner model prevails, the expected relationship between educational attainment and family formation is different. Women with high earning potential increasingly become more attractive partners on the mating market (Oppenheimer 1988; 1994; Sweeney 2002; DiPrete and Buchmann 2006). For them, the positive income effect may start to prevail, while they may dampen opportunity costs either by outsourcing child care and household chores (Kravdal 2007) or by sharing household work more equally with the male partner (Sullivan, Billari and Altintas 2014). For men, in turn, the opportunity costs may rise, because men are under pressure to increase their engagement in parenting and housework (Huinink and Kohli 2014:1301).

Not only an individual's own education matters for family formation, also the partner's education is relevant. The relative education of husband and wife has been affected by the reversal of the gender gap in education: before, husbands typically had as much as or more education as their wives; after the reversal, women typically are equally or more educated than their husbands (DiPrete and Buchmann 2006; Esteve et al. 2012; Grow and Van Bavel 2015). This is associated with an increased proportion of families where the wife is the main breadwinner (Klesment and Van Bavel 2015). Under these new circumstances, the significance of the educational attainment of the male partner may change. The income of the male partner may become a less crucial selection criterion who themselves have a high income. High earning women may become more interested in the social fathering skills of potential partners. Men with less education may compensate a limited income potential by showing off as "good fathers" on the mating market. By exhibiting the will and ability to be involved in household chores and child-rearing tasks, they may enhance their attractiveness to college educated women who want both a career and a family (Van Bavel 2012).

Summing up the argument so far, to the extent that the dual earner family becomes the norm, the impact of education on family formation will tend to become more similar for men and women, with opportunity costs of parenthood for men and income effects for women becoming more salient. At the same time, the impact of men's own education will also depend on the education of the chosen spouse, and vice versa. All this implies that the effect

of education on the transition to parenthood cannot be understood without considering the selection effects involved in union formation.

On top of the selection effects, the interdependencies between union formation and the transition to parenthood complicate the distinction between cause and effect. For men in particular, accounting for the interrelatedness of union formation and parenthood is crucial. Finding a suitable partner is a necessary prerequisite to become a father. After finding a partner, the transition to fatherhood strongly depends on the stability of the union and the characteristics of the spouse. Co-residence typically implies an acceleration of the family formation process. Conversely, looking in the other causal direction, a pregnancy may expedite co-residence (Baizan et al. 2003). The interrelationship between union formation and parenthood is strengthened by the fact that individuals are heterogeneous in factors that may simultaneously affect both kinds of events. Some of such factors are observed, like education, but many are typically unobserved, like personality traits and physical characteristics. A proper empirical analysis should account for these interdependencies.

Earlier empirical findings

Studies addressing men's transition to parenthood tend to fall into one of two categories. First, life course research about the transition to adulthood typically looks at men and women separately, investigating variability in the occurrence, order, and timing of events. Second, studies that focus on fertility from a couple's perspective typically look at the influence of male characteristics after controlling for female characteristics.

Studies about the transition to adulthood consistently show that school and college enrollment delay union formation and parenthood, for men as well as for women (Blossfeld and Huinink 1991; Corijn and Klijzing 2001). Enrollment delays parenthood more than union formation, and the effect is found to be weaker for men than for women (Liefbroer and Corijn 1999; Corijn and Klijzing 2001; Winkler-Dworak and Toulemon 2007). The effect of educational attainment is much less clear than the enrollment effect. Some studies found that high attainment accelerates men's union formation and marriage (Goldscheider and Waite 1986; Corijn and Klijzing 2001; Winkler-Dworak and Toulemon 2007). Kalmijn (2011; 2013) showed that, in Europe, men with better career prospects and positions on the labor market have higher chances of forming a union and getting married, while unmarried cohabitation was related to a lower socioeconomic position. As to the effect on the transition to parenthood, Corijn and Klijzing (2001) found that the effect of educational attainment was negative both for men and women in several Western European countries, but weaker for men

than for women. Yet, in France, the effect was found to be positive for men, while for women a U-shaped effect was found – both low and highly educated women showing higher first birth rates compared to the medium educated) (Winkler-Dworak and Toulemon 2007). Perhaps some of these inconsistencies relate to the fact that the effect of education may change over the life course. Previous studies suggest that the association between educational attainment and the transition to parenthood may depend on time since graduation (Brien et al. 1999; Martín-García and Baizan 2006; Winkler-Dworak and Toulemon 2007; Martín-García 2009). The economic rationale for this is that differences in earning potential may show up only a couple of years after graduation, after a professional career has been established and people get ready for family formation. This would hold most for people with advanced degrees.

In the literature on fertility from a couple's perspective, scholars have been looking at the relative influence of partners' characteristics on the transition to parenthood (Corijn et al. 1996; Gustafsson and Worku 2006; Martín-García 2009; Vignoli et al. 2012; Begall 2013; Jalovaara and Miettinen 2013). These studies include individuals who were in a co-residential union at the time of data collection. This implies that those less likely to enter or stay in a union are more likely to stay out of the picture. This is a crucial shortcoming because it disregards the effects of mate selection on fertility. More specifically, we expect that men's education affects their fathering rates chiefly through its effect on being selected by women as sexual partners. If this is true, studies from a couple's perspective might wrongly conclude that the husband's education matters less for fertility than the wife's, while in fact his education may matter as much or more, but only during a different stage of the family formation process.

Few studies account for the interrelationships between union formation and fertility, applying the simultaneous equations approach for hazards developed by Lillard and colleagues (Lillard 1993; Lillard and Waite 1993; Lillard, Brien and Waite 1995; Brien et al. 1999; Lillard and Panis 2003). A couple of studies have analyzed the interrelationship between first union formation and the transition to parenthood for women (Brien et al. 1999; Baizan et al. 2003). Both studies concluded that the two processes share unobserved factors that jointly affect the experience of events. For men, the relationship between union formation and the transition to fatherhood has hardly been studied. Winkler-Dworak and Toulemon (2007) considered the role of men's selection into unions when analyzing the transition to fatherhood in France. Their results suggest that part of the positive effect of men's

educational attainment on the transition to fatherhood was driven by the higher rate of union formation among highly educated men. In Finland, Jalovaara (2012) and Jalovaara and Miettinen (2013) found that socioeconomic resources for Finnish men and women were important to be selected into unions as well as to become parents. Still, the authors find that the female partner's education has a stronger impact on the transition to parenthood than the male partner's education (Jalovaara and Miettinen 2013). The latter finding suggest, in line with our hypothesis, that his education matters more for being selected into a union rather than for becoming a father once selected into a union.

The selection-into-union hypothesis

Based on the theoretical arguments and earlier empirical studies summarized above, we expect that the level of educational attainment has a consistently positive effect on men's transition to fatherhood, but that this effect is largely indirect, namely through its positive effect on the rate of union formation. The underlying assumption is that highly educated men tend to be attractive on the mating market. An economic reason for their attractiveness is their relatively high earning potential. Another attractive feature, at least for some women, may be that they are more likely to hold egalitarian gender-role attitudes, and thus may be more prone to share household chores with their partners. Lower educated men have more difficulty finding a committed partner and therefore, all else equal, are expected to experience lower fatherhood rates.

These expectations hold for men who have completed their studies and who are no longer enrolled in education. The effect of enrollment is expected to be negative throughout. So, even if men who pursue a college degree will have their first child later, we are predicting consistently higher fatherhood rates for them once they have obtained their higher degree. Our hypothesis implies that the higher fatherhood rates for the college educated can be explained by the fact that they are able to match with a committed female partner more quickly than their low educated counterparts. When we model union formation and fatherhood jointly, we expect to find a consistent positive effect of educational attainment on union formation but no consistent effect on the transition to fatherhood.

Data and methods

Data and measures

To test our hypothesis, we have used survey data of the Generations and Gender Surveys (GGS, see http://www.ggp-i.org/) for 10 European countries that provide the information needed: Austria, Belgium, Bulgaria, Estonia, France, Hungary, Lithuania, Norway, Poland and Romania. We chose to replicate our empirical tests in these 10 countries rather than focusing on just one or a couple of countries. We included these particular countries because the GGS-data needed to test our hypothesis are available for them.[1] The number of countries is insufficient, however, to test the role played by country-level factors using multilevel models.

The GGS surveys include men and women between 18 and 79 years old and deal with topics such as fertility and partnership histories, the transition to adulthood, economic activity, care duties and attitudes (Vikat et al. 2007). For this study, we selected men born after 1949. Men were censored at age 45 for both union formation and first birth, because both first unions and first births very rarely occur at older ages even among men. We used information about the month and year of events. If the month was missing, we randomly imputed it. From an initial sample of 51224 men (for all countries), we excluded from the analysis men involved in same-sex relationships (n=163) and those born before 1950 (n=14881). Then we dropped cases with missing or misreported information on the date of first union (n=703) as well as date of first birth (n=28), cases where it was not possible to determine whether or not the event of interest occurred and cases for whom the event occurred before the 15th birthday (n=125 for first union and n=29 for first birth). After these selections, our sample totaled 35295 men. We distinguish between three birth cohorts: 1950-1959, 1960-1969, and 1970-1990[2]. Table 1.1 gives descriptive statistics for the samples and variables used.

[1] We excluded Russia and Georgia because of the very different cultural and institutional backgrounds of these countries. The data for the Czech Republic have become available later on, but not when we were conducting our analyses.

[2] The higher limit of this birth cohort differs among countries: 1983 (Estonia, Hungary); 1988 (Norway); 1989 (Lithuania); 1990 (Austria, Belgium); 1993 (Poland).

Table 1.1 Descriptive statistics

	Austria	Belgium	Bulgaria	Estonia	France	Hungary	Lithuania	Norway	Poland	Romania
Cohort %										
1950-1959	NA	27.55	20.10	28.52	28.09	29.40	25.16	25.66	29.20	31.30
1960-1969	29.84	28.07	29.59	27.22	30.71	22.76	24.84	28.00	20.07	29.65
1970-1990	70.16	44.38	50.31	44.26	41.20	47.84	50.00	46.35	50.72	39.05
Education %										
Low	10.54	26.25	23.79	17.80	21.54	12.97	14.47	19.70	12.20	21.44
Medium	72.35	38.19	62.20	62.39	50.27	73.38	64.79	48.41	67.98	66.62
High	17.11	34.99	13.96	19.81	28.20	13.65	20.75	30.80	19.34	11.94
Unknown	0.00	0.56	0.05	0.00	0.00	0.00	0.00	1.09	0.47	0.00
Parents' education %										
Both low	24.13	44.85	42.07	32.14	49.56	34.72	35.71	21.25	31.89	60.62
Only father medium-high	25.36	18.43	9.51	12.12	17.25	21.99	7.39	22.42	14.41	16.59
Only mother medium-high	9.73	11.85	12.21	20.02	11.55	7.20	21.19	18.86	10.92	4.03
Both medium-high	36.00	19.51	32.93	35.39	12.50	35.38	27.03	32.78	38.91	17.07
Both unknown	4.79	5.36	3.27	0.32	9.14	0.71	8.68	4.69	3.87	1.69
Partner's education %										
Low	12.12	11.63	15.16	8.60	11.16	8.44	4.09	7.13	6.59	20.46
Medium	48.22	13.02	33.89	55.41	20.76	30.72	38.28	17.26	47.05	38.51
High	9.06	18.17	14.18	16.02	14.67	8.39	16.13	17.49	18.46	7.34
Unknown	0.15	39.49	0.59	0.00	31.42	22.60	14.20	34.71	0.42	10.35
Not in union	30.45	17.69	36.18	19.97	22.00	29.85	27.29	23.41	27.48	23.34
Siblings %										
No siblings	10.13	9.90	13.66	14.50	6.59	11.67	16.89	4.90	8.07	15.12
1	33.30	29.37	55.54	46.32	25.86	48.58	41.06	29.15	29.38	31.91
2	24.34	21.84	14.57	21.32	25.54	21.33	21.74	32.05	24.92	22.05
3+	32.23	38.88	16.22	17.86	42.01	18.42	20.31	33.90	37.63	30.91
Number of events by type										
Number of first births	809	1186	2273	1170	1359	1675	1873	2690	3833	2457
Number of first unions	1366	1903	2597	1479	2202	2651	2488	3857	4458	2986
Sample size	1964	2312	4069	1848	2823	3779	3422	5036	6147	3895

Source: own calculations on selected GGS data

The date of first partnership formation has been coded using information on the month and year of the first reported co-residential partnership, distinguishing between unmarried cohabitation and marriage and keeping track of any changes in marital status. The GGS surveys collected information only on partnerships which lasted for at least three months (Vikat et al. 2007). To focus on the relationship between *first* union as well as first birth, respondents who experienced more than one co-residential union have been censored at the

end of the first one, so that first births happening in higher order union are not considered. Only in Norway and Austria did the proportion of first births in higher order unions exceed 10% (namely 12 and 11%, respectively). In France, it was almost 9%, in Belgium and Hungary 7%, far below 6% in the rest of the countries. As a robustness check, for countries where the proportion of first births in higher order unions exceeded 6%, we ran a version of our models that was modified to include higher order unions. The results do not deviate substantially from the ones reported here.

The date of the transition to fatherhood was back-dated by 8 months to avoid anticipation bias (Baizan et al. 2003), based on the date of birth reported by the respondent for his first biological child, if any. It is known that men may underreport their fertility (by a major margin in the US and the UK according to Rendall et al. 1999; only minor underreporting according to the estimates by Alich 2009 for Russia). However, we are interested in the transition to actual fathering of own children rather than in fertility per se. We assume that, if men fail to report any children, then they were probably not actually performing father roles for these children. Conversely, if a husband reports a child as his own biological child while his wife actually got pregnant from another man, this still implies a father role, in sociological terms, for the husband.

Our analysis looks at two dimensions of education: enrollment and attainment. Both variables are constructed as time-varying covariates. To capture the enrollment dimension, time since graduation is included as a categorical variable with three categories: (1) still enrolled in education; (2) up to two years after graduation; (3) more than two years after graduation. We distinguish between the very recent graduates and those who left school or college more than two year ago because it takes some time to find a job after graduation (typically 1 to 2 years, Quintini and Manfredi 2009), earn a living and be ready for family formation (cf. Martín-García 2009). The end of enrollment is based on the time of actual graduation as reported by the respondent in most cases (93.64%). It is based on the standard age at graduation for the relevant attainment level and country in a minority (6.36%) of cases; for men attaining a high (college) level of education, where study duration is more varying, this percentage is only 0.38%. Still, as a robustness check, we re-ran our models after dropping cases where explicit information on the actual date of graduation was missing. The results remained basically the same and would not affect our conclusions.

For educational attainment, we grouped men into three levels (low, medium, high), collapsing categories from the International Standard Classification of Education (ISCED

1997). The first group includes those who completed primary plus lower secondary school (at least 8 years of schooling, ISCED 0, 1, and 2). The medium category includes men who attained the upper-secondary and those who also got a post-secondary level (ISCED 3 and 4). The highly educated men are those who got a bachelor/master/PhD degree (ISCED 5 and 6).

Corijn and Klijzing (2001) argue that the effect of education on the transition to parenthood may not be constant but changing over the life course, which would represent a violation of the proportionality assumption. One way to try to account for this time-dependency is to interact age with education. However, earlier studies suggest that the time-dependence is a function of time since graduation rather than age per se (Brien et al. 1999; Martín-García and Baizan 2006; Martín-García 2009) – with age at graduation obviously correlating with the level of the degree obtained. We have therefore included interaction terms between men's educational attainment and the three categories of years since graduation in all models. Apart from that, we also include five-year age splines to accommodate any non-linear relationship between age and the events of interest (see below for more technical details).

The female partner's education is categorized in the same way as for the male respondent. To catch the effect of a long-term dimension of the social status, we included parents' educational attainment, coded into 4 categories ("both parents low educated", "only the father at least medium educated", "only the mother at least medium educated", "both parents at least medium educated"). Since it has been showed that individuals with more siblings are more prone to start a family (Murphy 2013), we included the number of siblings as a time constant variable.

All variables mentioned so far have been included in both the model of first birth and first union. Next, the model of first birth includes the time-varying endogenous variable "union status", indicating whether the male respondent is living in a co-residential union or not. Once a man is living with a female partner, we distinguish between those partnered with a low, medium or highly educated woman. We added a category "not available" to accommodate men in union but with missing information on the partner's education. We also included a time varying dummy variable indicating whether the union is a formal marriage rather than unmarried cohabitation. Finally, in the model of first union formation, a time-varying dummy variable for the conception of the first child (birth date backdated by 8 months) is included.

Analytical strategy

We test the selection-into-union hypothesis in two steps. First, we model first union formation and the transition to parenthood separately. In the second step, we model the two processes

jointly. For the first step we fitted both a piecewise exponential hazard model (see, e.g., Blossfeld et al. 2007) using the STATA software and a piecewise linear hazard model using the aML package (Lillard and Panis 2003). We compared the results from both approaches to check whether the results would be similar, which was indeed the case. We present the results from the piecewise linear approach, which was also the one applied in the second step. A general formulation of the piecewise linear hazard model is:

$$\ln h(t) = \gamma\,'T(t) + \beta\,'X(t)$$

$\ln h(t)$ is the log-hazard of occurrence at time t, $\gamma\,'T(t)$ captures the baseline hazard duration dependence, and $\beta' X\,(t)$ represent the covariates (both fixed and time-varying) which shift the baseline hazard up or down. In the piecewise linear specification $\gamma\,'T(t)$, we implement five year age intervals to parameterize the baseline log-hazard. The duration dependence is characterized by a pattern of nodes and slopes as well as an origin (Panis 1994). We set the latter at the 15th birthday of the respondent.

To address the endogeneity of union formation and parenthood, with both processes affecting each other, we jointly model the two processes and estimate the correlation between residuals to represent unobserved heterogeneity. In doing so, we account for unmeasured, time-constant factors that simultaneously affect union formation and parenthood. One advantage of the joint model is that we account for the fact that individuals with a higher probability of experiencing the two events will leave the population at younger ages. As a result, the observed hazard at older ages for both events strongly reduces due to selection. When we do not account for this, the baseline hazard represents also this selection effect rather than only the actual effect of age (Baizan et al. 2003). Our statistical estimations follow the framework developed by Lillard (1993). In formal terms, we have:

$$\ln h(t)^{F} = \gamma\,'T(t) + \beta\,'X(t) + \varepsilon$$

$$\ln h(t)^{U} = \gamma\,'T(t) + \beta\,'X(t) + \delta$$

The superscripts F and U refer to the equation for fatherhood and union formation, respectively. The random variables ε and δ represent unobserved heterogeneity terms, which are assumed to have a joint bivariate standard normal distribution:

$$\begin{pmatrix}\varepsilon\\ \delta\end{pmatrix} \sim N\left(\begin{pmatrix}0\\ 0\end{pmatrix}, \begin{pmatrix}\sigma_\epsilon^2 & \rho_{\varepsilon\delta}\\ \rho_{\varepsilon\delta} & \sigma_\delta^2\end{pmatrix}\right)$$

Since we consider only *first* unions and births, we deal with non-repeatable events. Aassve et al. (2003) showed that the estimates of hazard models for non-repeatable, correlated

events may be sensitive to the variance of the unobserved heterogeneity term. To check the sensitivity in our case, we ran our models in two versions: one with fixing the variance to 1 (the variance of the standard normal distribution) and one where we estimated the variance empirically. The results tend to be robust as to the direction of the effects and their significance, changing slightly with regard the magnitude of the effects. In France and Estonia, the estimated correlation between unobserved factors changes both in sign and statistical significance, but the estimates for the fixed effects of education – the ones of substantive interest – remain stable also in these two countries.

The models are estimated and replicated for each country-sample separately. We did not apply multilevel modeling because our focus is not to test the effect of country characteristics. Rather, we want to replicate the same hypothesis testing in different contexts. Anyway, the number of countries would be too small to apply multilevel modeling and test hypotheses about the role of country characteristics. Note that, in an analysis not reported below, we combined our 10 countries. The results we then got are an averaged, stylized summary of our main finding, consistent with what we do report below for countries separately.

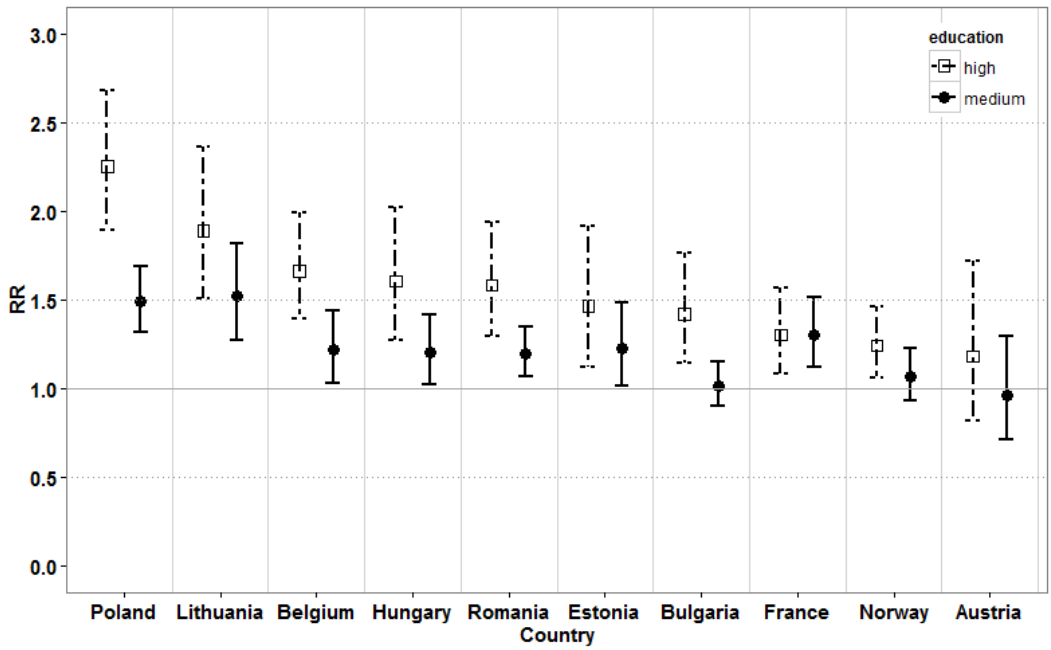
Results

We have fitted 3 models for each of the 10 countries. Appendix 1.A reports the estimates for all 30 models. For each country, Model 1 is the model of the transition to fatherhood that does not control for union status. Controls that are included, as well as in all subsequent models, are age, cohort, time since graduation, own educational attainment of the male respondent, parental educational attainment, and number of siblings. Model 2 adds the control for union status, type of union, and the educational attainment of the female partner, if any. Figure 1.1 plots the effects of own educational attainment on the transition to fatherhood, estimated from Model 1, along with their 95% confidence intervals; Figure 1.2 is doing the same for Model 2. All figures compare the rates for men with high or medium educational attainment with the reference category with low educational attainment (represented by the 1.0 line), two years or more after graduating from school or college.

As can be seen in Figure 1.1, educational attainment has a consistently positive effect on the transition to fatherhood when union status is not controlled for. In all countries except Austria, the difference between low educated and highly educated men is statistically significant. In the majority of countries, the fatherhood rates are more than 50% higher for college educated men compared to men with low educational attainment. The relative rate for

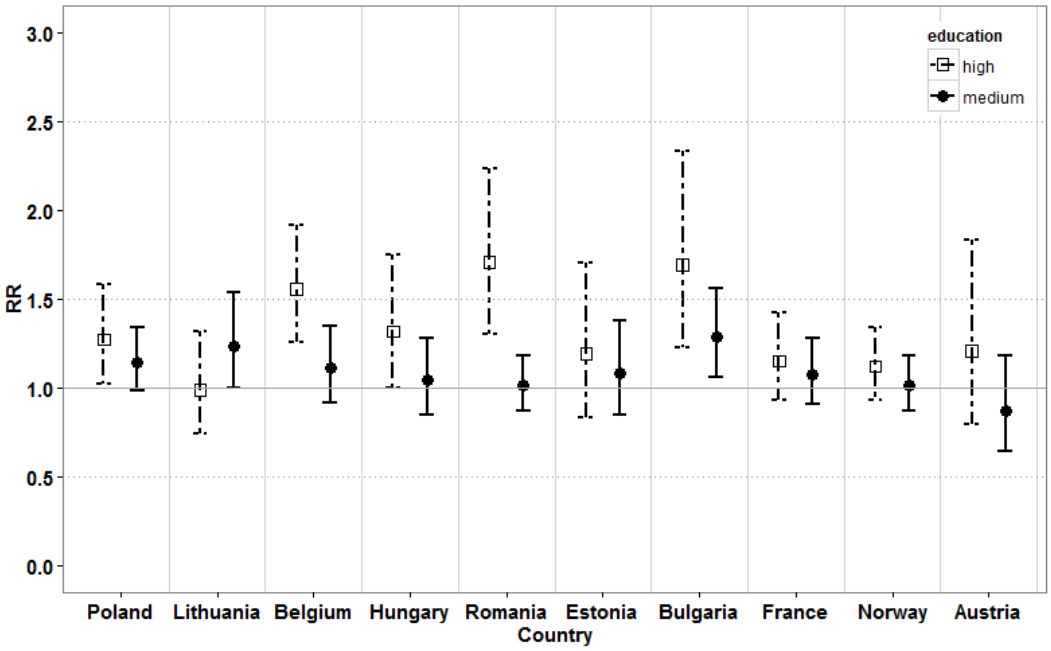
medium educated men is in most countries in between. Figure 1.2 shows that once we control for union status, the effect of education is strongly reduced in most of the countries. Thus, most of the positive effect of education on the transition to fatherhood appears to be driven by union formation.

Figure 1.1 Estimates for the effect of educational attainment on the transition to fatherhood without controlling for union status: relative risks for highly educated (square with dashed bars) and medium educated men (circles with solid bars) compared to low educated men (1.0 reference line)



Note: displayed relative risks apply for men who have been out of school for more than two years

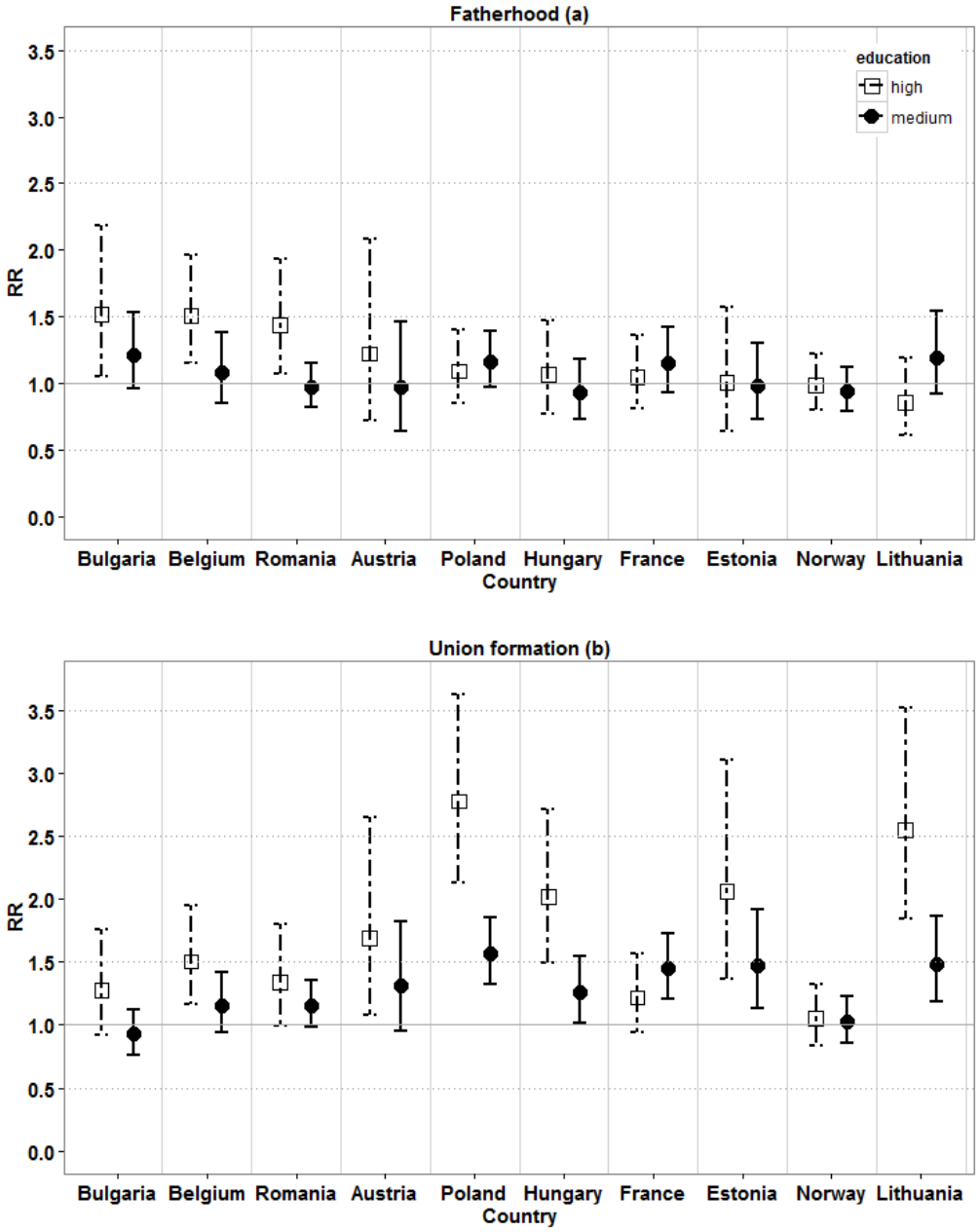
Figure 1.2 Estimates for the effect of educational attainment on the transition to fatherhood after controlling for union status: relative risks for highly educated (square with dashed bars) and medium educated men (circles with solid bars) compared to low educated men (1.0 reference line)



Note: displayed relative risks apply for men who have been out of school for more than two years

Next, we account for the selection-into-union effect and the endogeneity of union formation and fatherhood by simultaneously estimating joint models of both processes. This is Model 3. Again, full results are shown in Appendix 1.A. Figure 1.3 plots the effects of male educational attainment on fatherhood (a) and union formation (b). It turns out that there is no effect of educational attainment on fatherhood rates after accounting for the selection-into-union process in most countries. Belgium, Romania and Bulgaria are the only countries where we still see a direct, statistically significant effect: in these three countries, college educated men exhibit higher fatherhood rates compared to men with low educational attainment. In Austria, the point estimate for highly educated men is also a bit above the 1.0 reference line of the low educated men, but the difference is not statistically significant. For medium educated men, there are no significant differences in any country. In contrast, educational attainment positively influences union formation in most countries, with statistically significant differences in all countries except Bulgaria and Norway. In France, unexpectedly, medium educated men appear to exhibit higher union formation rates than highly educated men, but the difference is not statistically significant. All-in-all, the estimates quite consistently point to a positive educational gradient in union formation rates.

Figure 1.3 Estimates for the effect of educational attainment on the transition to fatherhood (a) and union formation (b) from a joint model simultaneously estimating the parameters for both processes: relative risks for highly educated (square with dashed bars) and medium educated men (circles with solid bars) compared to low educated men (1.0 reference line)



Note: displayed relative risks apply for men who have been out of school for more than two years

The control variables in all models (Appendix 1.A) tend to have the expected effects – discussing these is beyond the focus of this paper. The joint models (Model 3 in each country) also yield estimates of the correlation between residual, unobserved terms in the fatherhood and union formation equations (see Appendix 1.B). Both processes are obviously positively correlated. Indeed, in all countries, the estimated correlation between the unobserved factors

in the joint model is positive as long as we exclude any of the two endogenous variables (union status in the equation of first birth or conception in the equation of first union). Interestingly, however, once we include in the system of equations both endogenous variables, the positive correlation between unobserved factors disappears in almost all countries. Only in Belgium the correlation between unobserved factors remains positive. In Austria it is not significant (probably due to the small sample size), in Norway it is positive but not significant, while in France the significance and sign of the correlation term are sensitive to the values of the unobserved heterogeneity factors.

In all eastern European countries (Bulgaria, Hungary, Poland and Romania as well as in Lithuania), the correlation between unobserved factors in both processes turns negative (the estimated correlation is not robust for Estonia). Such negative correlation implies that, after accounting for the effect of union formation on fatherhood and vice versa, there are some unobserved factors that enhance the experience of one event but delay the other. For instance, it could be that men with unobserved personality traits who are particularly eager to enter a romantic relationship decide to live with a partner relatively early while they are at the same time not eager to actually start fathering a child. Testing this interpretation is beyond the focus of this paper.

Discussion

Several authors have recently argued that men's attitudes, intentions and behaviors are becoming increasingly important factors to understand patterns and trends in family formation (Van Bavel 2012; Goldscheider et al. 2014; Huinink and Kohli 2014). Yet, empirical research so far has not yielded clear and consistent results about how men's characteristics affect the transition to parenthood. In this paper we have argued that the explanation for this may be that men's characteristics perhaps matter most in the process of union formation, where men with more attractive features for women are more likely to be selected as their partners. Empirical analyses that look at the couple level, after unions have been formed, will then perhaps fail to see any clear effects of male characteristics, net of the effects of female characteristics.

More specifically, in this paper we wanted to test the selection-into-union hypothesis with a focus on educational attainment. We expected that educational attainment has a consistently positive effect on men's transition to fatherhood, but that this effect is largely indirect, namely through its positive effect on the rate of union formation. Our results generally supported the hypothesis, with differences between European countries but with a

clear overall pattern: there is a positive educational gradient in men's union formation but, after accounting for that, not in their transition to fatherhood. This pattern shows up particularly for men who left school more than two years ago – presumably the time needed for the majority to have gained an established position in the labor market; before that, just after leaving school, the results are more mixed.

Our hypothesis appears to apply particularly strongly in Central and Eastern European countries, including the Baltic countries Lithuania and Estonia. In the latter two countries, there is a clear positive educational gradient in fatherhood rates, but this gradient vanishes completely when selection into union is accounted for. The positive educational gradient in union formation came out even more clearly in the joint modeling framework.

In Western Europe, Belgium is the only country where a positive educational gradient in fatherhood stands strong in the joint modeling framework, after accounting for union formation. Here, we can only speculate about the reasons for the Belgian exception – and it remains to be seen whether future studies with other data can replicate our GGS-based finding. If real, a positive educational gradient in fatherhood (after accounting for selection-into-union) could signify that there are strong father role expectations, and that the highly educated are the most likely to meet these expectations. An alternative explanation could be that the effect of educational attainment represents a direct income effect on the transition to fatherhood. We speculate, however, that this would rather hold for the other two countries where a positive effect of education on fatherhood remains in the joint model – namely in Romania and Bulgaria, two economically disadvantaged Eastern European countries. In these countries, more highly educated men can perhaps more easily "afford" to father children – and perhaps low educated fail to report any children they have, if they are aware of them at all.

By jointly modeling union formation and fatherhood, this study was able to overcome major limitations of earlier work on education and the transition to fatherhood. Earlier studies with models that included the education of the husband along with the education of the wife typically selected only established couples in the analytical sample. Our argument is that this approach suffers from a crucial selection bias because men's education chiefly influences fertility through the selection into unions. Alternatively, studies in the transition-to-adulthood tradition have typically failed to control for the wife's educational attainment, ignoring strong educational homogamy and, hence, unable to tell whether it is his or her education that matters.

This study has its limitations. First, we cannot be sure about whether or not the men in our sample may have had other, perhaps unacknowledged children with other women than the ones identified in our data. Yet, as social scientists, we are more interested in children who are at least actually acknowledged by their fathers than in biological fatherhood per se. Second, we have disregarded the distinction between marriage and unmarried cohabitation in this study. For example, we have not modeled the selection process which would lead highly committed men to marry for having children rather than to cohabit. This could affect the correlation terms between unobserved factors: men who signal stronger commitment by marrying would probably have higher fatherhood rates than those who choose to cohabit. As a result, the positive correlation between the transition to parenthood and marriage would be stronger compared to the correlation with unmarried cohabitation. The aim of this paper, however, was not to analyze the role of different kinds of living arrangement histories, but rather to assess the role played by men's educational attainment in their transition to parenthood through the selection into union. Note that, while we do not model the selection process into marriage versus cohabitation, we do control for the distinction in the equation for the transition to fatherhood. Third, our paper focused only on two dimensions of education: enrollment and attainment. Still it would be interesting to test if the selection-into-union hypothesis holds with regard to the effect of educational field of study. Finally, future research could also address the role of mating market composition in terms of educational attainment on the selection effect at the time of union, including both individual- and macro-level indicators.

Even with all mentioned limitations in mind, we forcefully argue that the selection-into-union effect should be taken into account, particularly when comparing the role of education in the transition to parenthood between men and women. Currently, the consensus in the field seems to be that women's education matters more for fertility than men's. However, this paper has shown that earlier research may have strongly underestimated the role of men's education because the process of their selection into unions has been ignored.

With the reversal of the gender gap in education, the selection of men into unions based on their education may even become a more important factor, given that the growing group of college educated women typically are looking for partners with the same educational status (Van Bavel 2012). More generally, we speculate that role of men's characteristics, intentions and behaviors may become more and more important for future fertility trends and patterns because college educated women are increasingly "competing" for men with similar

education. The relative scarcity of the latter on the marriage market may enhance their power to have they say in decision-marking about fertility. But if we fail to account for the selection-into-union process, we risk missing that point.

It would be interesting to compare the effect of education on fertility through selection-into-union between men and women. Perhaps selection on education is playing an increasingly important role for women, as their contributions to the household budgets are becoming more significant and as their own earning potential is playing an increasingly important role in mate selection by men. Several studies have reported that the positive effect of education, and its earning potential, on marriage rates has strongly increased over time (Oppenheimer 1994; 1997; Sweeney 2002). In a recent European study, low educated mothers were found to remain single more often than in earlier cohorts and compared to college educated women (De Hauw et al. 2015). Selection based on education may therefore increasingly play a role for women's transition to parenthood as well. These findings and trends highlight the relevance of investigating the selection-into-union hypothesis not only for men, as was done in this study, but also for women.

Appendices

Appendix 1.A

Model 1 (M1) refers to analysis of first birth without controlling for union status. Model 2 (M2) is the full model of the transition to fatherhood. Model 3 (M3) refers to the joint model of first birth and first union.

Table 1.A1 Regression coefficients Austria, stepwise modeling

	Austria											
	M1			M2			M3 First birth			M3 First union		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
Duration splines												
15-19	0.70	0.08	**	0.54	0.08	**	0.54	0.08	**	0.55	0.04	**
20-24	0.19	0.03	**	0.04	0.03		0.06	0.04	†	0.17	0.02	**
25-29	0.01	0.03		-0.07	0.03	*	-0.04	0.04		0.07	0.03	*
30-34	0.00	0.04		-0.04	0.04		0.01	0.05		-0.10	0.05	*
35-39	-0.30	0.09	**	-0.29	0.09	**	-0.26	0.09	**	-0.08	0.10	
40+	-0.03	0.29		-0.03	0.30		-0.06	0.29		0.23	0.21	
Constant	-7.51	0.43	**	-7.14	0.42	**	-7.91	0.47	**	-5.93	0.28	**
Cohort (Ref. = 1970-1990)												
1950-59	-	-		-	-		-	-		-	-	
1960-69	0.40	0.08	**	0.32	0.08	**	0.48	0.10	**	0.04	0.09	
Education (Ref.= Low educated with at least 2 years after leaving school)												
Enrolled	-0.52	0.18	**	-0.57	0.18	**	-0.53	0.24	*	0.11	0.17	
Low0-2	1.30	0.38	**	0.96	0.40	*	1.13	0.42	**	0.94	0.34	**
Medium0-2	-0.26	0.21		-0.33	0.21		-0.22	0.26		0.24	0.18	
Medium2+	-0.04	0.15		-0.13	0.15		-0.04	0.21		0.27	0.17	
High0-2	-0.29	0.27		-0.22	0.26		-0.28	0.32		0.31	0.26	
High2+	0.17	0.19		0.19	0.21		0.20	0.27		0.53	0.23	*
Unknown	-	-		-	-		-	-		-	-	
Parents' education (Ref.=Both low)												
Only father medium-high	-0.17	0.10	†	-0.19	0.11	†	-0.25	0.14	†	0.13	0.11	
Only mother medium-high	-0.14	0.14		-0.30	0.17	†	-0.43	0.19	*	0.41	0.16	**
Both medium-high	-0.23	0.10	*	-0.23	0.11	*	-0.25	0.14	†	0.01	0.12	
Both unknown	0.04	0.17		-0.01	0.16		-0.07	0.21		0.36	0.21	†
Siblings (Ref.= No siblings)												
1	0.50	0.15	**	0.45	0.15	**	0.56	0.20	**	0.19	0.14	
2	0.45	0.15	**	0.43	0.16	**	0.53	0.21	*	0.16	0.15	
3+	0.55	0.15	**	0.53	0.15	**	0.69	0.20	**	0.05	0.15	
Partner's education (Ref.=Not in union)												
Low				1.87	0.17	**	2.42	0.23	**			
Medium				1.83	0.11	**	2.19	0.18	**			
High				1.66	0.16	**	1.89	0.22	**			
Unknown	-	-		-	-		-	-		-	-	
Married (Ref. = Not married)				1.17	0.10	**	1.60	0.11	**			
Conception (Ref.=No conception)										2.04	0.20	**
SigmaEps							1.00			1.00		
SigmaDelta							1.00			1.00		
Rho							-0.22	0.17		-0.22	0.17	
ln-L	-4584.45			-4124.73			-11015.80					

†p < .1; *p < .05; **p < .01

Table 1.A2 Regression coefficients Belgium, stepwise modeling

	Belgium											
	M1			M2			M3 First birth			M3 First union		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
Duration splines												
15-19	0.76	0.13	**	0.60	0.13	**	0.54	0.13	**	0.27	0.03	**
20-24	0.28	0.03	**	0.07	0.03	*	0.13	0.04	**	0.20	0.02	**
25-29	0.01	0.02		0.00	0.02		0.10	0.03	**	-0.05	0.03	
30-34	-0.16	0.03	**	-0.16	0.03	**	-0.13	0.03	**	-0.10	0.04	*
35-39	-0.13	0.05	*	-0.14	0.05	**	-0.12	0.05	*	-0.07	0.07	
40+	-0.41	0.15	**	-0.41	0.15	**	-0.41	0.15	**	-0.27	0.15	†
Constant	-7.98	0.65	**	-8.04	0.64	**	-8.39	0.64	**	-3.64	0.18	**
Cohort (Ref. = 1970-1990)												
1950-59	0.11	0.08		-0.14	0.09		-0.03	0.12		-0.11	0.09	
1960-69	0.15	0.07	*	0.11	0.08		0.16	0.10	†	-0.14	0.09	
Education (Ref.= Low educated with at least 2 years after leaving school)												
Enrolled	-0.69	0.14	**	-0.42	0.15	**	-0.60	0.17	**	-0.44	0.10	**
Low0-2	-0.01	0.38		0.28	0.38		0.24	0.42		-0.38	0.16	*
Medium0-2	-0.73	0.29	*	-0.43	0.30		-0.43	0.31		-0.37	0.14	**
Medium2+	0.20	0.09	*	0.11	0.10		0.08	0.12		0.14	0.10	
High0-2	-0.58	0.18	**	-0.39	0.18	*	-0.59	0.21	**	0.07	0.14	
High2+	0.51	0.09	**	0.44	0.11	**	0.41	0.14	**	0.41	0.13	**
Unknown	0.30	0.29		0.67	0.46		0.63	0.79		-0.38	0.34	
Parents' education (Ref.=Both low)												
Only father medium-high	-0.05	0.08		-0.02	0.09		-0.04	0.12		0.10	0.10	
Only mother medium-high	0.02	0.10		0.10	0.11		0.12	0.15		0.13	0.12	
Both medium-high	-0.15	0.09		-0.13	0.10		-0.22	0.13	†	0.03	0.11	
Both unknown	0.03	0.13		0.08	0.15		0.15	0.19		0.07	0.14	
Siblings (Ref.= No siblings)												
1	0.09	0.12		0.06	0.12		0.15	0.15		0.04	0.13	
2	0.25	0.12	*	0.20	0.12		0.32	0.15	*	0.12	0.14	
3+	0.25	0.11	*	0.24	0.12	*	0.33	0.14	*	-0.08	0.13	
Partner's education (Ref.=Not in union)												
Low				2.55	0.15	**	2.52	0.21	**			
Medium				2.65	0.14	**	2.62	0.19	**			
High				2.64	0.13	**	2.56	0.17	**			
Unknown				1.71	0.12	**	1.44	0.21	**			
Married (Ref. = Not married)				0.57	0.08	**	0.87	0.10	**			
Conception (Ref.=No conception)										1.43	0.37	**
SigmaEps							1.00			1.00		
SigmaDelta							1.00			1.00		
Rho							0.35	0.15	*	0.35	0.15	*
ln-L	-6525.80			-5887.11			-15421.65					

†p < .1; *p < .05; **p < .01

Table 1.A3 Regression coefficients Bulgaria, stepwise modeling

	Bulgaria											
	M1			M2			M3 First birth			M3 First union		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
Duration splines												
15-19	0.51	0.04	**	0.31	0.04	**	0.30	0.04	**	0.54	0.04	**
20-24	0.21	0.02	**	-0.01	0.02		0.04	0.02	†	0.22	0.02	**
25-29	-0.18	0.02	**	-0.20	0.02	**	-0.18	0.02	**	-0.14	0.02	**
30-34	-0.13	0.03	**	-0.16	0.03	**	-0.14	0.04	**	-0.13	0.04	**
35-39	-0.13	0.07	*	-0.14	0.07	*	-0.12	0.07	†	-0.19	0.08	*
40+	-0.30	0.18	†	-0.31	0.18	†	-0.30	0.18	†	-0.09	0.14	
Constant	-5.91	0.22	**	-5.88	0.22	**	-6.48	0.23	**	-5.82	0.20	**
Cohort (Ref. = 1970-1990)												
1950-59	0.54	0.06	**	0.18	0.09	*	0.22	0.10	*	0.48	0.08	**
1960-69	0.56	0.06	**	0.35	0.07	**	0.34	0.08	**	0.38	0.07	**
Education (Ref.= Low educated with at least 2 years after leaving school)												
Enrolled	-0.61	0.09	**	-0.18	0.12		-0.19	0.14		-0.77	0.11	**
Low0-2	0.51	0.22	*	0.48	0.21	*	0.39	0.22	†	0.55	0.18	**
Medium0-2	-0.58	0.12	**	-0.05	0.13		-0.03	0.15		-0.76	0.12	**
Medium2+	0.02	0.06		0.25	0.10	*	0.19	0.12		-0.08	0.10	
High0-2	0.29	0.13	*	0.58	0.16	**	0.55	0.19	**	-0.07	0.16	
High2+	0.35	0.11	**	0.53	0.16	**	0.42	0.19	*	0.24	0.16	
Unknown	-	-		-	-		-	-		-	-	
Parents' education (Ref.=Both low)												
Only father medium-high	-0.14	0.08	†	-0.13	0.11		-0.10	0.13		-0.28	0.12	*
Only mother medium-high	-0.25	0.08	**	-0.04	0.10		-0.02	0.12		-0.48	0.10	**
Both medium-high	-0.26	0.06	**	-0.20	0.09	*	-0.20	0.10	*	-0.36	0.08	**
Both unknown	-0.22	0.13		-0.08	0.18		-0.07	0.20		-0.14	0.18	
Siblings (Ref.= No siblings)												
1	0.10	0.07		0.03	0.09		-0.01	0.10		0.20	0.09	*
2	0.35	0.08	**	0.16	0.12		0.18	0.14		0.48	0.12	**
3+	0.46	0.08	**	0.33	0.11	**	0.32	0.14	*	0.44	0.12	**
Partner's education (Ref.=Not in union)												
Low				3.29	0.11	**	4.29	0.12	**			
Medium				3.50	0.09	**	4.32	0.10	**			
High				3.58	0.11	**	4.24	0.12	**			
Unknown				2.47	0.28	**	3.28	0.37	**			
Married (Ref. = Not married)				-0.01	0.08		0.47	0.08	**			
Conception (Ref.=No conception)										3.65	0.12	**
SigmaEps							1.00			1.00		
SigmaDelta							1.00			1.00		
Rho							-0.57	0.03	**	-0.57	0.03	**
ln-L	-12114.05			-9801.37			-22053.67					

†p < .1; *p < .05; **p < .01

Table 1.A4 Regression coefficients Estonia, stepwise modeling

	Estonia											
	M1			M2			M3 First birth			M3 First union		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
Duration splines												
15-19	0.77	0.06	**	0.54	0.06	**	0.51	0.06	**	0.71	0.05	**
20-24	0.17	0.02	**	-0.10	0.03	**	-0.08	0.05	†	0.24	0.02	**
25-29	-0.14	0.03	**	-0.15	0.03	**	-0.13	0.04	**	-0.11	0.03	**
30-34	-0.12	0.05	*	-0.16	0.05	**	-0.15	0.06	*	-0.04	0.06	
35-39	-0.34	0.12	**	-0.34	0.11	**	-0.35	0.12	**	-0.20	0.14	
40+	-0.21	0.23		-0.27	0.25		-0.24	0.24		-0.16	0.31	
Constant	-7.14	0.33	**	-6.61	0.32	**	-7.02	0.34	**	-6.85	0.29	**
Cohort (Ref. = 1970-1990)												
1950-59	0.69	0.08	**	0.51	0.10	**	0.56	0.14	**	0.36	0.11	**
1960-69	0.61	0.08	**	0.62	0.09	**	0.66	0.12	**	0.27	0.10	**
Education (Ref.= Low educated with at least 2 years after leaving school)												
Enrolled	-0.23	0.12	†	-0.26	0.14	†	-0.44	0.18	*	0.01	0.15	
Low0-2	0.20	0.32		0.12	0.32		0.02	0.34		0.74	0.24	**
Medium0-2	-0.57	0.17	**	-0.54	0.18	**	-0.65	0.20	**	-0.21	0.16	
Medium2+	0.21	0.10	*	0.08	0.12		-0.02	0.15		0.38	0.14	**
High0-2	0.04	0.18		-0.16	0.20		-0.36	0.25		0.37	0.21	†
High2+	0.38	0.14	**	0.18	0.18		0.00	0.23		0.72	0.21	**
Unknown	-	-		-	-		-	-		-	-	
Parents' education (Ref.=Both low)												
Only father medium-high	0.26	0.10	**	-0.03	0.13		-0.04	0.18		0.31	0.16	†
Only mother medium-high	-0.08	0.09		-0.08	0.11		-0.08	0.13		-0.02	0.11	
Both medium-high	-0.03	0.08		-0.21	0.10	*	-0.31	0.13	*	0.29	0.12	*
Both unknown	-0.86	0.52	†	-1.04	0.81		-0.89	0.94		-0.16	0.42	
Siblings (Ref.= No siblings)												
1	0.10	0.09		0.14	0.10		0.19	0.13		0.08	0.11	
2	0.20	0.10	†	0.12	0.12		0.20	0.16		0.34	0.13	**
3+	0.06	0.11		0.10	0.13		0.15	0.16		0.14	0.14	
Partner's education (Ref.=Not in union)												
Low				3.00	0.16	**	3.81	0.29	**			
Medium				2.95	0.11	**	3.76	0.25	**			
High				2.91	0.13	**	3.68	0.27	**			
Unknown	-	-		-	-		-	-		-	-	
Married (Ref. = Not married)				0.38	0.09	**	0.67	0.10	**			
Conception (Ref.=No conception)										3.49	0.27	**
SigmaEps							1.00			1.00		
SigmaDelta							1.00			1.00		
Rho							-0.53	0.28	†	-0.53	0.28	†
ln-L	-6018.90			-5066.86			-11765.65					

†p < .1; *p < .05; **p < .01

Table 1.A5 Regression coefficients France, stepwise modeling

	France											
	M1			M2			M3 First birth			M3 First union		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
Duration splines												
15-19	0.76	0.10	**	0.56	0.10	**	0.51	0.10	**	0.80	0.10	**
20-24	0.22	0.03	**	-0.05	0.03	†	0.00	0.03		0.24	0.03	**
25-29	0.02	0.02		0.04	0.02	†	0.12	0.02	**	-0.04	0.02	†
30-34	-0.17	0.03	**	-0.15	0.03	**	-0.13	0.03	**	-0.06	0.03	
35-39	-0.17	0.06	**	-0.17	0.06	**	-0.15	0.06	**	-0.17	0.06	*
40+	-0.25	0.14	†	-0.25	0.14	†	-0.23	0.14	*	0.01	0.14	
Constant	-7.68	0.49	**	-7.33	0.47	**	-7.75	0.49	**	-6.78	0.29	**
Cohort (Ref. = 1970-1990)												
1950-59	0.18	0.08	*	0.01	0.09		0.10	0.11		0.09	0.08	
1960-69	0.15	0.07	*	0.15	0.07	*	0.18	0.09	*	0.05	0.08	
Education (Ref.= Low educated with at least 2 years after leaving school)												
Enrolled	-0.67	0.12	**	-0.41	0.13	**	-0.49	0.16	**	-0.56	0.10	**
Low0-2	0.31	0.60		0.61	0.63		0.59	0.66		-0.26	0.44	
Medium0-2	-0.51	0.21	*	-0.40	0.22	†	-0.42	0.24	†	0.01	0.12	
Medium2+	0.27	0.08	**	0.08	0.09		0.14	0.11		0.37	0.09	**
High0-2	-0.19	0.16		-0.05	0.17		-0.20	0.19		-0.05	0.13	
High2+	0.26	0.10	**	0.14	0.11		0.05	0.13		0.20	0.13	
Unknown	-	-		-	-		-	-		-	-	
Parents' education (Ref.=Both low)												
Only father medium-high	-0.09	0.09		-0.01	0.09		-0.01	0.11		0.18	0.09	*
Only mother medium-high	-0.16	0.10		-0.19	0.10	†	-0.28	0.12	*	0.21	0.11	†
Both medium-high	-0.19	0.10	†	-0.13	0.11		-0.15	0.13		-0.04	0.11	
Both unknown	-0.22	0.11	*	0.12	0.10		0.12	0.15		0.05	0.13	
Siblings (Ref.= No siblings)												
1	0.06	0.13		-0.16	0.13		-0.18	0.16		0.06	0.15	
2	0.06	0.13		-0.06	0.13		-0.05	0.16		0.03	0.15	
3+	0.08	0.12		-0.07	0.12		-0.04	0.16		-0.03	0.15	
Partner's education (Ref.=Not in union)												
Low				2.96	0.14	**	3.24	0.19	**			
Medium				2.90	0.11	**	3.02	0.16	**			
High				2.72	0.12	**	2.73	0.17	**			
Unknown				1.14	0.13	**	1.01	0.21	**			
Married (Ref. = Not married)				0.98	0.07	**	1.35	0.08	**			
Conception (Ref.=No conception)										2.09	0.21	**
SigmaEps							1.00			1.00		
SigmaDelta							1.00			1.00		
Rho							0.10	0.14		0.10	0.14	
ln-L	-7684.29			-6510.45			-17285.24					

†p < .1; *p < .05; **p < .01

Table 1.A6 Regression coefficients Hungary, stepwise modeling

	Hungary											
	M1			M2			M3 First birth			M3 First union		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
Duration splines												
15-19	0.67	0.07	**	0.50	0.06	**	0.46	0.06	**	0.68	0.04	**
20-24	0.24	0.02	**	0.02	0.02		0.00	0.02		0.26	0.02	**
25-29	-0.05	0.02	*	-0.07	0.02	**	-0.04	0.02	†	-0.07	0.02	**
30-34	-0.16	0.03	**	-0.14	0.03	**	-0.10	0.03	**	-0.12	0.04	**
35-39	-0.23	0.06	**	-0.24	0.06	**	-0.24	0.06	**	-0.18	0.09	*
40+	0.05	0.10		0.03	0.10		0.05	0.10		-0.11	0.20	
Constant	-7.61	0.35	**	-6.81	0.33	**	-7.13	0.34	**	-7.06	0.23	**
Cohort (Ref. = 1970-1990)												
1950-59	0.34	0.07	**	-0.34	0.08	**	-0.41	0.10	**	0.68	0.07	**
1960-69	0.60	0.07	**	0.40	0.08	**	0.38	0.09	**	0.47	0.08	**
Education (Ref.= Low educated with at least 2 years after leaving school)												
Enrolled	-0.25	0.12	*	-0.30	0.13	*	-0.46	0.16	**	-0.25	0.12	*
Low0-2	1.30	0.30	**	0.91	0.30	**	0.61	0.34	†	1.17	0.24	**
Medium0-2	0.06	0.15		0.01	0.16		-0.13	0.18		-0.03	0.13	
Medium2+	0.19	0.08	*	0.04	0.10		-0.08	0.12		0.23	0.11	*
High0-2	0.23	0.18		0.15	0.19		0.02	0.21		0.32	0.18	†
High2+	0.47	0.12	**	0.28	0.14	†	0.07	0.16		0.70	0.15	**
Unknown	-	-		-	-		-	-		-	-	
Parents' education (Ref.=Both low)												
Only father medium-high	-0.04	0.07		-0.06	0.08		-0.07	0.09		0.09	0.08	
Only mother medium-high	-0.24	0.11	*	0.00	0.13		-0.05	0.15		-0.23	0.12	†
Both medium-high	-0.17	0.07	*	-0.18	0.08	*	-0.22	0.09	*	0.10	0.08	
Both unknown	-0.18	0.28		-0.08	0.40		-0.06	0.53		-0.35	0.49	
Siblings (Ref.= No siblings)												
1	0.12	0.08		-0.01	0.09		0.07	0.11		0.04	0.09	
2	0.25	0.09	**	0.04	0.10		0.13	0.13		0.26	0.10	**
3+	0.27	0.10	**	0.09	0.11		0.16	0.13		0.32	0.10	**
Partner's education (Ref.=Not in union)												
Low				2.40	0.15	**	3.24	0.17	**			
Medium				2.54	0.11	**	3.29	0.14	**			
High				2.47	0.13	**	3.13	0.16	**			
Unknown				0.77	0.12	**	1.22	0.17	**			
Married (Ref. = Not married)				0.62	0.09	**	0.92	0.10	**			
Conception (Ref.=No conception)										4.02	0.12	**
SigmaEps							1.00			1.00		
SigmaDelta							1.00			1.00		
Rho							-0.66	0.09	**	-0.66	0.09	**
ln-L	-9683.29			-8542.27			-21088.58					

†p < .1; *p < .05; **p < .01

Table 1.A7 Regression coefficients Lithuania, stepwise modeling

	Lithuania											
	M1			M2			M3 First birth			M3 First union		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
Duration splines												
15-19	0.83	0.06	**	0.71	0.06	**	0.71	0.06	**	0.77	0.05	**
20-24	0.26	0.02	**	0.03	0.02		0.00	0.03		0.30	0.02	**
25-29	-0.11	0.02	**	-0.12	0.02	**	-0.14	0.02	**	-0.08	0.02	**
30-34	-0.25	0.04	**	-0.22	0.04	**	-0.22	0.04	**	-0.11	0.04	**
35-39	-0.08	0.07		-0.09	0.07		-0.07	0.07		-0.02	0.06	
40+	-0.59	0.24	*	-0.59	0.23	*	-0.59	0.22	**	-0.61	0.20	**
Constant	-8.22	0.32	**	-7.74	0.32	**	-8.20	0.35	**	-7.52	0.27	**
Cohort (Ref. = 1970-1990)												
1950-59	0.20	0.06	**	0.10	0.08		0.17	0.09	†	-0.16	0.08	†
1960-69	0.38	0.06	**	0.30	0.07	**	0.34	0.09	**	-0.03	0.08	
Education (Ref.= Low educated with at least 2 years after leaving school)												
Enrolled	0.19	0.11	†	0.14	0.13		0.03	0.15		0.17	0.13	
Low0-2	0.26	0.23		0.06	0.23		-0.04	0.23		0.44	0.19	*
Medium0-2	0.37	0.12	**	0.20	0.13		0.08	0.15		0.55	0.13	**
Medium2+	0.42	0.09	**	0.21	0.11	†	0.18	0.13		0.40	0.12	**
High0-2	0.34	0.15	*	0.08	0.16		0.01	0.19		0.68	0.15	**
High2+	0.64	0.11	**	-0.01	0.15		-0.16	0.17		0.93	0.17	**
Unknown	-	-		-	-		-	-		-	-	
Parents' education (Ref.=Both low)												
Only father medium-high	-0.22	0.10	*	-0.19	0.13		-0.21	0.13	†	-0.14	0.13	
Only mother medium-high	-0.01	0.07		0.02	0.09		-0.03	0.11		0.11	0.10	
Both medium-high	-0.01	0.07		-0.04	0.09		-0.09	0.10		0.09	0.09	
Both unknown	-0.11	0.09		0.02	0.12		0.05	0.11		-0.12	0.11	
Siblings (Ref.= No siblings)												
1	0.37	0.08	**	0.26	0.09	**	0.34	0.11	**	0.19	0.10	†
2	0.55	0.08	**	0.33	0.10	**	0.34	0.12	**	0.35	0.11	**
3+	0.49	0.09	**	0.33	0.10	**	0.38	0.12	**	0.21	0.11	†
Partner's education (Ref.=Not in union)												
Low				2.34	0.20	**	3.40	0.21	**			
Medium				2.16	0.12	**	3.16	0.13	**			
High				2.12	0.14	**	3.07	0.15	**			
Unknown				0.23	0.16		1.07	0.17	**			
Married (Ref. = Not married)				0.90	0.11	**	1.17	0.12	**			
Conception (Ref.=No conception)										3.83	0.09	**
SigmaEps							1.00			1.00		
SigmaDelta							1.00			1.00		
Rho							-0.89	0.03	**	-0.89	0.03	**
ln-L	-9960.81			-8549.17			-19686.95					

†p < .1; *p < .05; **p < .01

Table 1.A8 Regression coefficients Norway, stepwise modeling

	Norway											
	M1			M2			M3 First birth			M3 First union		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
Duration splines												
15-19	0.85	0.06	**	0.70	0.06	**	0.68	0.06	**	0.83	0.03	**
20-24	0.25	0.02	**	0.00	0.02		0.05	0.02	*	0.29	0.01	**
25-29	0.04	0.02	*	-0.01	0.02		0.09	0.02	**	-0.02	0.02	
30-34	-0.08	0.02	**	-0.06	0.02	**	-0.01	0.02		-0.02	0.03	
35-39	-0.26	0.05	**	-0.27	0.05	**	-0.24	0.05	**	-0.20	0.05	**
40+	-0.19	0.11	†	-0.21	0.11	*	-0.21	0.11	†	-0.01	0.09	
Constant	-8.27	0.31	**	-7.63	0.29	**	-8.16	0.31	**	-7.30	0.21	**
Cohort (Ref. = 1970-1990)												
1950-59	0.56	0.05	**	0.42	0.06	**	0.66	0.08	**	0.10	0.06	
1960-69	0.40	0.05	**	0.32	0.05	**	0.40	0.06	**	0.15	0.06	*
Education (Ref.= Low educated with at least 2 years after leaving school)												
Enrolled	-0.29	0.07	**	-0.32	0.08	**	-0.44	0.09	**	-0.25	0.08	**
Low0-2	0.55	0.28	†	0.27	0.27		0.15	0.30		0.51	0.19	**
Medium0-2	0.04	0.10		-0.02	0.10		-0.09	0.12		-0.08	0.10	
Medium2+	0.07	0.07		0.01	0.08		-0.07	0.09		0.02	0.09	
High0-2	-0.09	0.11		-0.17	0.11		-0.32	0.12	**	0.10	0.12	
High2+	0.22	0.08	**	0.11	0.09		-0.01	0.11		0.05	0.12	
Unknown	-0.21	0.26		0.05	0.27		-0.23	0.34		0.13	0.24	
Parents' education (Ref.=Both low)												
Only father medium-high	0.06	0.06		-0.03	0.07		-0.08	0.08		0.10	0.08	
Only mother medium-high	0.03	0.07		-0.04	0.07		-0.06	0.09		0.05	0.08	
Both medium-high	-0.07	0.06		-0.10	0.07		-0.21	0.08	*	-0.08	0.08	
Both unknown	-0.17	0.09	†	-0.24	0.13	†	-0.40	0.14	**	-0.29	0.14	*
Siblings (Ref.= No siblings)												
1	0.05	0.10		-0.07	0.10		-0.02	0.14		0.16	0.12	
2	0.14	0.10		-0.06	0.10		0.05	0.14		0.28	0.12	*
3+	0.23	0.10	*	0.08	0.10		0.19	0.14		0.24	0.12	*
Partner's education (Ref.=Not in union)												
Low				2.40	0.11	**	2.66	0.14	**			
Medium				2.49	0.08	**	2.70	0.11	**			
High				2.42	0.07	**	2.45	0.11	**			
Unknown				1.76	0.07	**	1.73	0.12	**			
Married (Ref. = Not married)				0.70	0.05	**	1.13	0.06	**			
Conception (Ref.=No conception)										1.97	0.14	**
SigmaEps							1.00			1.00		
SigmaDelta							1.00			1.00		
Rho							0.17	0.11		0.17	0.11	
ln-L	-14563.96			-12961.55			-31692.67					

†p < .1; *p < .05; **p < .01

Table 1.A9 Regression coefficients Poland, stepwise modeling

	Poland											
	M1			M2			M3 First birth			M3 First union		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
Duration splines												
15-19	0.80	0.05	**	0.78	0.05	**	0.75	0.05	**	0.83	0.05	**
20-24	0.25	0.01	**	0.03	0.02	*	0.07	0.02	**	0.33	0.01	**
25-29	-0.10	0.01	**	-0.16	0.01	**	-0.13	0.02	**	-0.07	0.02	**
30-34	-0.15	0.02	**	-0.15	0.02	**	-0.13	0.02	**	-0.17	0.03	**
35-39	-0.21	0.05	**	-0.20	0.05	**	-0.18	0.05	**	-0.16	0.05	**
40+	-0.42	0.15	**	-0.42	0.15	**	-0.42	0.14	**	-0.15	0.10	
Constant	-7.90	0.25	**	-7.65	0.26	**	-8.08	0.27	**	-8.45	0.25	**
Cohort (Ref. = 1970-1990)												
1950-59	0.36	0.04	**	0.18	0.06	**	0.25	0.07	**	0.17	0.06	**
1960-69	0.30	0.05	**	0.35	0.06	**	0.44	0.06	**	-0.06	0.06	
Education (Ref.= Low educated with at least 2 years after leaving school)												
Enrolled	-0.06	0.08		-0.23	0.09	**	-0.30	0.10	**	0.14	0.10	
Low0-2	-0.57	0.59		-0.64	0.59		-0.85	0.64		0.68	0.35	†
Medium0-2	0.26	0.10	**	0.05	0.10		0.03	0.11		0.38	0.10	**
Medium2+	0.40	0.06	**	0.14	0.08	†	0.15	0.09		0.45	0.09	**
High0-2	0.14	0.11		-0.29	0.13	*	-0.48	0.14	**	0.80	0.12	**
High2+	0.81	0.09	**	0.24	0.11	*	0.09	0.13		1.02	0.14	**
Unknown	-0.01	0.31		-0.24	0.30		-0.43	0.36		0.26	0.39	
Parents' education (Ref.=Both low)												
Only father medium-high	0.06	0.05		-0.09	0.07		-0.07	0.08		0.13	0.07	†
Only mother medium-high	-0.03	0.07		-0.10	0.08		-0.10	0.09		0.06	0.09	
Both medium-high	0.02	0.05		-0.14	0.06	*	-0.21	0.07	**	0.24	0.06	**
Both unknown	0.01	0.09		-0.06	0.11		-0.15	0.15		0.22	0.12	†
Siblings (Ref.= No siblings)												
1	0.13	0.07	†	0.16	0.09	†	0.15	0.10		0.05	0.10	
2	0.25	0.07	**	0.29	0.09	**	0.29	0.10	**	0.16	0.10	
3+	0.30	0.07	**	0.36	0.09	**	0.43	0.10	**	0.09	0.10	
Partner's education (Ref.=Not in union)												
Low				1.88	0.14	**	2.77	0.16	**			
Medium				1.92	0.08	**	2.72	0.10	**			
High				1.94	0.09	**	2.53	0.11	**			
Unknown				1.40	0.58	*	2.20	0.83	**			
Married (Ref. = Not married)				0.77	0.08	**	1.11	0.08	**			
Conception (Ref.=No conception)										3.80	0.07	**
SigmaEps							1.00			1.00		
SigmaDelta							1.00			1.00		
Rho							-0.59	0.05	**	-0.59	0.05	**
ln-L	-20239.41			-17850.69			-37501.32					

†p < .1; *p < .05; **p < .01

Table 1.A10 Regression coefficients Romania, stepwise modeling

	Romania											
	M1			M2			M3 First birth			M3 First union		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
Duration splines												
15-19	0.66	0.06	**	0.52	0.06	**	0.51	0.06	**	0.66	0.05	**
20-24	0.33	0.02	**	0.03	0.02		0.03	0.02		0.37	0.02	**
25-29	-0.14	0.02	**	-0.19	0.02	**	-0.19	0.02	**	-0.05	0.02	*
30-34	-0.11	0.03	**	-0.15	0.03	**	-0.14	0.03	**	-0.07	0.03	*
35-39	-0.47	0.08	**	-0.46	0.08	**	-0.45	0.08	**	-0.22	0.07	**
40+	0.00	0.16		-0.02	0.16		-0.02	0.16		-0.19	0.15	
Constant	-7.20	0.30	**	-7.19	0.30	**	-7.74	0.31	**	-7.00	0.25	**
Cohort (Ref. = 1970-1990)												
1950-59	0.24	0.06	**	0.12	0.07	†	0.14	0.08	†	0.23	0.07	**
1960-69	0.36	0.06	**	0.30	0.07	**	0.35	0.08	**	0.34	0.07	**
Education (Ref.= Low educated with at least 2 years after leaving school)												
Enrolled	-0.42	0.09	**	-0.12	0.11		-0.19	0.12		-0.53	0.10	**
Low0-2	-0.29	0.46		-0.22	0.48		-0.24	0.49		0.35	0.29	
Medium0-2	-0.04	0.12		0.07	0.12		0.02	0.13		-0.15	0.11	
Medium2+	0.18	0.06	**	0.01	0.08		-0.03	0.09		0.14	0.08	†
High0-2	0.08	0.14		0.12	0.16		-0.04	0.18		0.38	0.15	**
High2+	0.46	0.10	**	0.54	0.14	**	0.36	0.15	*	0.29	0.15	†
Unknown	-	-		-	-		-	-		-	-	
Parents' education (Ref.=Both low)												
Only father medium-high	-0.09	0.06		-0.01	0.08		-0.04	0.08		-0.05	0.08	
Only mother medium-high	-0.29	0.13	*	-0.28	0.18		-0.31	0.18	†	-0.16	0.15	
Both medium-high	-0.20	0.07	**	-0.29	0.09	**	-0.35	0.10	**	0.05	0.09	
Both unknown	0.10	0.19		0.10	0.22		0.16	0.28		0.16	0.22	
Siblings (Ref.= No siblings)												
1	0.07	0.07		0.12	0.09		0.16	0.10		-0.01	0.09	
2	0.21	0.07	**	0.13	0.09		0.09	0.11		0.21	0.10	*
3+	0.32	0.07	**	0.28	0.09	**	0.28	0.10	**	0.28	0.09	**
Partner's education (Ref.=Not in union)												
Low				3.59	0.11	**	4.55	0.12	**			
Medium				3.58	0.11	**	4.47	0.12	**			
High				3.14	0.15	**	4.00	0.16	**			
Unknown				2.35	0.13	**	3.15	0.15	**			
Married (Ref. = Not married)				0.11	0.09		0.33	0.09	**			
Conception (Ref.=No conception)										3.73	0.11	**
SigmaEps							1.00			1.00		
SigmaDelta							1.00			1.00		
Rho							-0.69	0.05	**	-0.69	0.05	**
ln-L	-12898.79			-10527.22			-24242.41					

†p < .1; *p < .05; **p < .01

Appendix 1.B

In appendix 1.B we report the sensitivity of the correlation term in two cases: (1) fixed variance; (2) free variance estimated by the model.

Table 1.B1 Sensitivity of correlation terms to the value of the variance, 10 countries

	Austria		Belgium		Bulgaria		Estonia		France	
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free
Variance First birth (SigmaEps)	1	1.25**	1	1.02**	1	1.26**	1	1.12**	1	0.56**
Variance First union (SigmaDelta)	1	1.34**	1	1.65**	1	2.23**	1	1.87**	1	1.86**
Correlation (Rho)	-0.22	0.06	0.35*	0.33**	-0.56**	-0.42**	-0.53†	0.025	0.1	-0.27*
	Hungary		Lithuania		Norway		Poland		Romania	
	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free	Fixed	Free
Variance First birth (SigmaEps)	1	1.11**	1	1.03**	1	1.01**	1	1.11**	1	1.04**
Variance First union (SigmaDelta)	1	1.09**	1	1.48**	1	1.97**	1	1.30**	1	1.91**
Correlation (Rho)	-0.66**	-0.56**	-0.89**	-0.87**	0.17	0.32**	-0.59**	-0.48**	-0.70**	-0.58**

†p < .1; *p < .05; **p < .01

Chapter 2. Gender differences in the effect of education on fertility

Abstract

Micro-economic theories predict differential connections between education and fertility for men and women. In societies where women are expected to take the larger share of domestic work, the educational gradient in fertility is assumed to be negative for women and positive for men. Recent studies on the issue have highlighted some reversals that have occurred between women's education and fertility, while little is known about patterns for men. We used data from the Generation and Gender surveys (1960-1987 cohorts) of Austria, Belgium, Bulgaria, Czech Republic, France, Lithuania, Poland and Romania to analyze the gender differences in the effect of education on fertility. We particularly focused on the effect of the earning potential and gender composition of the study discipline as well as the level of educational attainment. We used European Labor Force Survey data to estimate the earning potential of study disciplines and Eurostat data to calculated the share of women within each field of study. Next, we modeled jointly the transition to first, second and third births for women and men by means of event history analysis. Our results show that the effect of educational attainment differs between genders mainly with regard to the transition to first birth and that an important role is played by the selection into union. The earning potential by field of study, instead, affects similarly all parities for men and women, i.e. a higher earning potential is associated with lower birth rates. Effects on births beyond the first child appear to be more similar between genders than expected.

Keywords: education, gender differences, fertility, field of study, joint modeling

Introduction

In many Western as well as non-Western countries, the number of highly educated women reaching the reproductive ages has been exceeding the number of highly educated men in recent decades (Vincent-Lancrin 2008). Given the many linkages between education and family behavior, this may have important consequences for fertility (Van Bavel 2012). A general and consistent finding relates to the postponement of parenthood and low total fertility rates due to the expansion of higher education especially among women (Sobotka 2004; Ní Bhrolcháin and Beaujouan 2012; Basten, Sobotka and Zeman. 2014).

Education is an important determinant of fertility as an indicator of socioeconomic resources. Micro-economists distinguish two types of mechanisms which explain the relationship between education and fertility: the income effect and the price effect (Becker 1991; Cigno 1991). The income effect accounts for the fact that the more educated people tend to earn a higher income and they are therefore more likely to afford the monetary costs of having (additional) children (positive effect). The price effect acts through opportunity costs: highly educated people have higher opportunity costs because they lose more once they devote extra time to non-paid activities after becoming a parent (negative effect). A specialization model within the household based on a gender-division of labor would predict opposite associations between education and fertility for men and women. The price effect characterizes the relationship between education and fertility for women, and the income effect for men (Becker 1991).

Recently, two theoretical approaches in family demography, i.e. the multiple equilibria framework and the Gender Revolution Theory, have emphasized the role of gender egalitarianism both in society at large and within households as engine for fertility. More specifically, both frameworks have highlighted that the negative relationship between education and women's fertility is weakening and in some contexts it is even turning positive (cf. Esping-Andersen and Billari 2015; Goldscheider et al. 2015). A reason for such change in the relationship between education and fertility may be that the earning potential of highly educated women may have become more important in their fertility decisions, such that a positive income effect may be showing up for them, while at the same time, as men engage more in raising children, the opportunity costs of parenthood may be becoming a more important factor for men (Huinink and Kohli 2014).

In a way, the balance of positive income effects and negative price effects of human capital may be moving in a zero sum game dynamic. By this, we mean that at one point in

time, a negative relationship between education and fertility for women may be counterbalanced by a positive relationship for men, while at other times, when the relationship turns more positive for women, then it may become more negative for men. On one hand, with the diffusion of the dual-earner family, which is substituting the male-breadwinner family model, women are expected to importantly contribute to the household income through activity in the paid labor market. This is why a positive income effect of education on fertility may show up. On the other hand, men are increasingly involved in the private sphere (household chores, childcare, etc.), this could lead to a weakening of the positive effect of men's education on fertility, which is usually predicted by micro-economic theories of the family. Still, evidence which could help to understand the mechanisms that link gender-dynamics and fertility behaviors is lacking since most work on education and fertility concerns women. If men are included at all, it is typically in the context of their couple relationship (Trimarchi and Van Bavel 2015).

As a growing and more diverse share of the female as well as the male population attains advanced levels of education, family and fertility behavior within the group of highly educated people may have become more heterogeneous. This is one reason why a growing body of the literature is focusing on the role of field of study on fertility (e.g., Cooney and Uhlberg 1989; Hoem et al. 2006a, 2006b; Van Bavel 2010). Moreover, there are at least two additional reasons why it is important to focus on the field of study when analyzing gender differences in fertility. First, the field of study is a good proxy for the economic potential of individuals' over their life course, since it is related to the future occupation, labor market activity and income in general. By focusing on the field of study we avoid endogeneity problems that would arise if current income is included in the equation, since childbearing and childbearing intentions are known to affect income. Endogeneity issues are especially problematic when detailed time-varying information on employment status, occupation, income are not available (Xie et al. 2003). The second reason to focus on the field of study is that while female education expanded tremendously over time, gender segregation with regard to the field of study and ensuing occupation is strong and steady over time (Charles and Bradley 2009). This implies that education may have a different impact on fertility for men and women, since the choice of the field of study also embeds individuals' family preferences, gender stereotypical behavior, opportunities and constraints in reconciling family and work (Van Bavel 2010; Ohlsson-Wijk 2015a).

Overall, we aim to make a twofold substantive contribution to the literature. First, since the bulk of earlier work is on women's fertility, we aim to expand our knowledge on the relationship between men's education and fertility. Second, we broaden our understanding of the effect of the field of study on higher order births both for women and men by estimating the earning potential of different fields of study and see how this, along with the gender composition of study disciplines, is associated with fertility.

From a methodological point of view, it is worth noting that the observed positive relationship between women's education and fertility is often specifically attributed to the effect on second births. However, previous studies have shown that it could be an artifact of the modeling approach, since a positive effect of the educational level on second and third births may be driven by the selection into parenthood (Kravdal 2001; 2007; Kreyenfeld 2002; Koytcheva 2006; Tesching 2012). Some highly educated women, for unobserved reasons, may be more likely to have a child, or have it at an earlier age, compared to other highly educated peers. Such selection makes them also more likely to have a second child. As a result, the positive effect of educational level on the transition to second births may be related to joint unobserved factors across parities that affect the selection into parenthood of the individuals. The positive association between education and fertility would then apply only to a selective subgroup.

Since we also study higher order births, we control for the selectivity into parenthood by modeling first, second and third birth jointly. We follow the approach proposed by Kravdal (2001), nesting birth episodes within individuals. In this way, we can explore the effect of education on fertility after accounting for selection. This will enable us to assess whether the selection into parenthood affect also the relationship between men's education and higher order births.

We use data from the Generation and Gender surveys (1960-1987 cohorts) of Austria, Belgium, Bulgaria, Czech Republic, France, Lithuania, Poland and Romania. These are the countries that collected information on the field of study that we need for this study. To have a direct measure of the earning potential by field of study and country, we apply OLS regression to European Labor Force Survey to predict potential income level at age 50-54. To obtain the share of women within a field by country and across level of educational attainment, we further used the joint UNESCO/OECD/Eurostat database on education, which is an administrative data collection that is administered jointly by the United Nations Educational, Scientific, and Cultural Organization - Institute for Statistics (UNESCO-UIS),

the Organization for Economic Co-operation and Development (OECD), and the Statistical Office of the European Union (EUROSTAT). We estimate all models for women and men separately. Our results show that the effect of educational attainment differs between genders mainly with regard to the transition to first birth: a positive effect of attainment level primarily shows up for men while opportunity costs seem to dominate for women. In both cases, things crucially depend on union formation. The earning potential by field of study, instead, affects similarly all parities for men and women, i.e. a higher earning potential is associated with lower birth rates. Effects on births beyond the first child appear to be more similar between genders than expected.

Education and fertility of women and men: similarities and differences

Education affects fertility via several mechanisms, because fertility implies not only the birth of children but also the time and money invested to care for and raise them (Hobcraft and Kiernan 1995). As a result, scholars usually address the impact of education on fertility as "multifaceted," more specifically considering the following dimensions: enrollment, level, and field of study (Kravdal and Rindfuss 2008; Lappegård and Rønsen 2005). In this paper, we will focus on two dimensions: the level of education and the field of study.

Level of education

The prominent theory about the effect of educational level on fertility and how it differs by gender stems from micro-economic approaches of the family (Cigno and Ermisch 1989; Becker 1991; Gustafsson 2001). Micro-economic theories predict opposite associations for men and women between education and fertility. Following the male-breadwinner model, the price effect, i.e., higher opportunity costs, is more characteristic for the relationship between education and fertility among women, since childbearing leads to a reduction of time spent in the paid labor market, particularly for women. The income effect, i.e., higher income to afford the monetary costs of having children, predominates among men, since they are supposed to be the main breadwinners. A family model that is built on specialization and gender-division of labor presupposes compensation in housework and paid work between partners; this is why opposite signs of the effect of education on fertility for men and women are expected.

Scholars have also highlighted mechanisms that may not necessarily be specific for men or women. First of all, highly educated people may have more opportunities (e.g., more flexible jobs, bigger social-networks, capability to outsource childcare and housework) and

skills to better face higher opportunity costs (Kravdal 2007; Raz-Yurovich 2014). Moreover, a high level of education is also an important determinant of partnership rates. Highly educated men, for instance, are more attractive on the mating market and they tend to have higher union formation rates (Trimarchi and Van Bavel 2015). With the dual-earner model established, highly educated women also become more attractive on the mating market (Oppenheimer 1994; De Hauw et al. 2015; Goldscheider et al. 2015).

Several empirical findings have corroborated the positive association between men's fertility (in terms of total fertility rate and first, second, or third birth timing) and level of education in various contexts (Kravdal and Rindfuss 2008; Lappegård and Rønsen 2013; Niesen et al. 2014; Tragaki and Bagavos 2014; Trimarchi and Van Bavel 2015). For first birth timing, however, a negative effect of men's education has also been found (Corijn and Klijzing 2001; Blossfeld et al. 2005; Martín-García 2009). For women, the effect of educational level is negative, particularly with regard to the first birth transition (Wood et al. 2014). Recently, scholars have emphasized the fact that, for the most recent cohorts, the educational gradient of first birth is weakening in some countries (Wood et al. 2014; Goldscheider et al. 2015). With regard to women's higher order births, the effect of education is more puzzling. A positive effect of educational level on second and third births may be driven by selection into the transition to first birth (Kravdal 2001, 2007; Kreyenfeld 2002; Koytcheva 2006; Tesching 2012). Furthermore, the positive assortative mating between highly educated men and women, the so-called "partner effect," has been also considered another reason for the observed positive effect of education on women's second births (Kreyenfeld 2002; Kreyenfeld and Konietzka 2008; Klesment et al. 2014), even if it has not always been corroborated (cf. Gerster et al. 2007; Bartus et al. 2013;). In general, with regard to the educational gradient in higher order births, a lot of variation across contexts has been found, posing the question of whether macro-level factors, such as family-friendly policies, diffusion of gender-egalitarian norms, and availability of childcare, may somehow be behind the positive effect of the educational level on second births (cf. Van Bavel and Rozanska-Putek 2010; Klesment et al. 2014; Wood et al. 2014).

Still, despite the overwhelming research on the relationship between educational and fertility, it is not possible to draw a general conclusion on gender differences in the effect of educational level on fertility since comparative studies between women and men are lacking. These kinds of studies are usually confined to the comparison of transitions into adulthood

(Corijn and Klijzing 2001; Winkler-Dworak and Toulemon 2007), rather than fertility histories (Kravdal and Rindfuss 2008).

Field of study

A growing strand of research focuses on the role of the field of study to understand the mechanisms that link education and fertility (Cooney and Uhlenberg 1989; Lappegård and Rønsen 2005; Hoem et al 2006a; 2006b; Martín-García 2009; Van Bavel 2010; Lappegård et al. 2011; Tesching 2012; Begall and Mills 2013; Oppermann 2014). The educational field may represent a more distinctive trait of an individual's educational trajectory, especially since the expansion of higher education (Cooney and Uhlenberg 1989).

The field of study has been considered in the literature for its close affinity to the individual's future occupation (Ohlsson-Wijk 2015a). From an economic perspective, scholars have pinpointed several dimensions that the choice of a discipline may affect: (1) the income potential; (2) the job sector – private versus public; (3) the school-to-work transition, according to the individual's aspirations; and (4) protection against skill depreciation (cf. Lappegård and Rønsen 2005; Hoem et al. 2006a; Van Bavel 2010; Tesching 2012). In order to examine how characteristics of the field of study may affect the transition into motherhood for different contexts, Van Bavel (2010) attempted to directly measure the earning profile. In line with micro-economic theories, the author found that women that graduated in disciplines with higher earning profiles tended to have higher likelihoods of postponing motherhood.

The gender composition of the field of study is another dimension to be considered, since it may also affect fertility via the socialization process during the learning and (future) working environment. Women and men may socialize about (gender stereotypical) parenting roles with people of one's own sex: "when there are many individuals of one's own sex there may be larger possibilities of *doing gender*" (Ohlsson-Wijk 2015b:12). Van Bavel (2010) showed that women who graduated in a study discipline that is characterized by strong (gender)stereotypical family attitudes are less likely to postpone motherhood. Several studies have corroborated the positive association between the choice of female-dominated fields and first birth rates for women (Lappegård and Rønsen 2005; Martín-García and Baizan 2006; Van Bavel 2010; Tesching 2012; Begall and Mill 2013; Michelmore and Musick 2013), whereas mixed results have been found for higher order births and completed fertility (Hoem et al. 2006a; 2006b; Tesching 2012).

In general, much less is known about the effect of a man's field of study on his fertility. Data from Spain and Norway reinforce economic arguments that predict a positive relation

between high earning potential and fertility for men, if we assume that male-dominated fields have higher earning potentials than female-dominated fields (Martín-García 2009; Lappegård et al. 2011). These studies, however, did not directly account for the earning potential of study disciplines, and thus the results may be also in line with the argument that socialization processes among people of one's own sex positively affect fertility.

Research hypotheses

Overall, it is not clear yet to what extent women and men face different opportunities and/or constraints to become parents given their level of education and field of study. We will test three main hypotheses that concern the effect of the level of education, the effect of earning potential, and the gender composition of a study discipline.

Hypothesis 1a stems from micro-economic arguments of the differential relationship between education and fertility by sex. Once individuals have completed their education, we expect a positive gradient in attainment levels with regard to the transition into fatherhood, whereas we expect a negative educational gradient for the transition into motherhood.

Hypothesis 1b concerns higher order births. Since recent findings showed that women's educational levels have a positive effect on second births, even after accounting for partnership status, we expect a positive effect of education on higher order births for both women and men.

Hypothesis 2 concerns the effect of field of study. We assume that individuals that graduated in disciplines with high income potentials may be in a position to sustain the economic burden of children. On the other hand, a higher earning potential is often translated into higher opportunity costs by investing time in caring and rearing the children. As a result, we expect a positive effect of earning potential for men (income effect) and a negative effect of higher earning potential for women (opportunity costs) with regard to all births.

Hypothesis 3 is about the role of the gender composition of the field of study and ensuing socialization processes. This hypothesis is based on the assumption that individuals who graduated in disciplines with a higher share of one's own sex may (self) reinforce gender stereotypical behaviors for what is normatively expected from a woman and a man within a couple. As a result, we may expect that a woman graduated in a typical female-dominated field would have a higher fertility rate than a woman that graduated in a male-dominated field. Similarly, we expect that a man that graduated in stereotypical masculine disciplines will have higher fertility than a man that graduated in female-dominated fields.

Data and methods

Sample selection and dependent variables

To test our hypotheses, we applied event history analyses for the transition to first, second, and third births to the Generation and Gender Surveys (GGS) of eight European countries that collected information on the field of study. These countries are: Austria, Belgium, Bulgaria, the Czech Republic, France, Lithuania, Poland, and Romania. We focused on respondents born between 1960 and 1987 because the Austrian GGS does not include individuals born in the 1950s; therefore, we distinguished three birth cohorts in our models: 1960-1969, 1970-1979, and 1980-1987. From an initial sample of 44690 respondents, we dropped individuals with missing information on the level of education (n=125).

In this study, we examine the effect of educational level and educational field, rather than enrollment in education. As a consequence, our observation period starts at time of completion of the highest level of education attained, whatever the level of education. With regard to first birth, the process time is time spent since graduation until the conception of the first child (if that occurred), censoring (age 45), or interview, whichever came first. We used information about the month and year of births; if the month was missing, we randomly imputed it. The end of enrollment was based on the time of graduation as reported by the respondent (93.63%). If the information on graduation was missing, it was based on the standard age at graduation for the specific level of education and country (6.37% of the cases). For respondents attaining a tertiary level of education, where the study duration was more variable, this percentage was only 0.49%. We checked the robustness of our models to these assumptions by dropping the 6.37% with missing information on the actual age at graduation; the results were not affected.

We dropped cases for which the age at graduation was negative or low, relative to the level of education attained (n=384)[3]. Next, we dropped respondents with missing information on the time to first birth (n=46) or if the conception of the child occurred before obtaining the degree (n=4749); the proportion of cases deleted for the latter reason varied by country. In the majority of countries, it was below 8%, with the exceptions of Bulgaria below 12%, Poland at 15%, and Lithuania at 22%. As a robustness check, we re-ran our models, dropping one country at a time. While the uncertainties of the estimates increased because of the smaller

[3] We dropped cases if: the age at graduation reported was negative (n=32); if the individual reported an upper secondary level before age 14 (n=122); and if the individual reported a tertiary level of education before age 20 (n=230).

sample size, the main conclusions remained the same. Finally, 32 respondents were dropped by default because they reported an age at completion of education higher than 45, which was our censoring time[4]. After all the selections mentioned, the sample totaled 39380 respondents, 18746 males and 20634 females.

With regard to higher order births, the time process is given by the time spent from the previous birth until the subsequent conception and censoring occurred after 15 years (or interview time). The respondents at risk of having a second child were those who had a first child, then we dropped the respondents who did not experience a first child during our observational period (n=16936). Next, we dropped respondents with an invalid time to event for survival analysis (n=121). As a result, for the second birth analysis, the sample totaled of 32658 individuals, 9186 males and 13137 females.

The procedure for the third birth is the same as the one followed for the second birth. The respondents at risk were those who had a second child during the observational period. Overall, 8835 cases were deleted because they did not experience a second birth, and 63 cases were dropped because of a negative time to event. The total sample for the third birth analysis amounted to 13546 respondents, 5433 males and 8113 females.

Independent variables

The main independent variables are the level of education, the field of study, and its characteristics, i.e., the earning potential and the share of women within the field. We grouped respondents into three levels of education (low, medium, high), collapsing categories from the International Standard Classification of Education (ISCED 1997). The first group includes those who completed primary plus lower secondary school (at least 8 years of schooling, ISCED 0, 1, and 2). The medium category consists of respondents who completed the upper-secondary and a post-secondary level (ISCED 3 and 4). Finally, highly educated respondents got a bachelor/master/PhD degree (ISCED 5 and 6).

The field of study variable in GGS was collected as an open question and refers to the main discipline of the highest level of education attained. To harmonize the categories across countries and across surveys, since we needed to have a compatible variable with the European Labor Force Surveys (EU-LFS) too, we followed the indications of UNESCO/ISCED-F[2013][5] for the field of study. The variable consists of eight categories of disciplines: general/unspecified field (1); humanities and arts (2); social sciences/business/law

[4] Results were not affected if we increased the age at censoring.

[5] http://www.uis.unesco.org/Education/Pages/international-standard-classification-of-education.aspx accessed the 14th September 2015.

(3); science and technology (4); agriculture (5); education (6); health and welfare (7); and services (8). To keep the EU-LFS and GGS compatible, these categories are relative to respondents with a medium or high level of education only; for the low educated group (ISCED <= 2), the field of study was considered not applicable. A description of each category is available in Table 2.A1 of the Appendix 2.A.

For each field, we also measured the earning potential, i.e., a latent, unobservable capacity to earn an income (Xie et al. 2003:356). We used the 2009-2013 EU-LFS of the eight countries in our sample, and by means of OLS regression models we estimated the earning potential (measured in income deciles) for 144 groups defined by the country, field of study (or low education if field is not applicable), and sex. The detailed procedure and the results of OLS regressions are presented in Appendix 2.A. Next, we predicted the earning potential for people aged 50-54 and we linked those values to the GGS respondents by country, field of study (education if field not applicable), and sex. In our models for birth rates, we included the earning potential as a deviation from the mean of the country, to indicate variations in earning potential within the country and across fields of study.

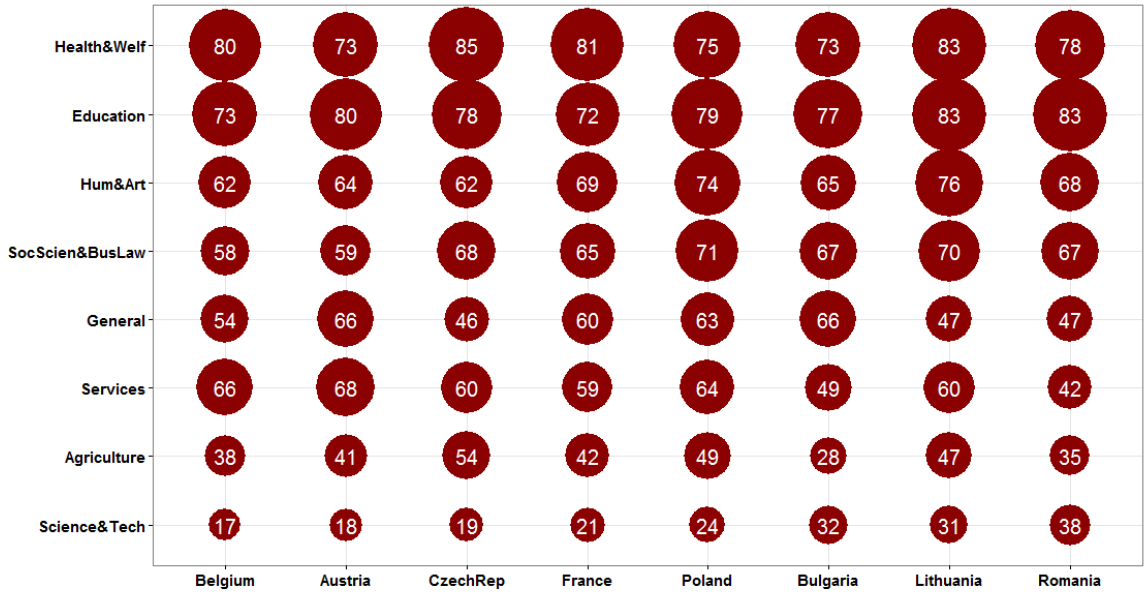
We also included the share of graduated women as a characteristic of the field of study. Eurostat has a time series from 1998 until 2012 for the absolute number of graduates (both sexes) in each field of study, excluding the *general/unspecified* field[6]. We extracted the number of females and the total number of graduates for each field and country from the Eurostat database, pooling data from level 3 to 6 of the ISCED 1997 classification, since we only had information about the field of study from the upper-secondary to the tertiary level. The share of women within the field was an average across the years (see Figure 2.1). To classify each field according to the share of women, we partly followed the categorization proposed by Oppermann (2014), who defined male-dominated fields as those with a share of women lower than 40% and female-dominated fields as those where the share was higher than 85%. We used a symmetrical categorization, which allows more balanced categories: (1) male-dominated field of study (proportion of women lower than 40%); (2) balanced field of study (proportion of women between 40-60%); and (3) female-dominated (proportion of women higher than 60%). A separate category represents the low educated group.

The effect of education on childbearing is related to the effect of education on union formation and partner's characteristics. This is why we also ran models that account for a

[6] Since Eurostat does not provide information on the general/unspecified field of study, we calculated the proportion of women in this category using the GGS data, considering all men and women born from 1960-1987 with at least an upper secondary degree.

time-varying variable that indicated whether the respondent was in a union or not. If the respondent was in a union, we distinguished between those partnered with a low, medium, or highly educated partner. We added a category, "not available," to account for individuals in union but with missing information about the partner's education. We additionally included both the father's and mother's educational attainment and the number of each respondent's siblings, since all these family background variables are relevant for individuals' childbearing behavior (Rindfuss et al. 1988). With regard to the transition to first birth, we controlled for age at graduation, centered at age 24, and its square, whereas for higher order births, we controlled for age at first birth, centered at age 26, and its square. Table 2.1, Table 2.2 and Table 2.3 describe the sample in greater detail.

Figure 2.1 Share of graduated women (ISCED 3 to 6) by field of study and country 1998-2012



Source: Own calculations on the UNESCO/OECD/Eurostat database on education [educ_grad5].

Table 2.1 Description of the male sample by country

	Austria	Belgium	Bulgaria	CzechR.	France	Lithuania	Poland	Romania	Total
Cohort(%)									
1960-1969	31.24	41.21	35.68	29.43	42.76	36.17	31.84	41.99	35.91
1970-1979	38.35	34.15	37.55	38.41	36.84	35.48	37.61	37.40	37.13
1980-1987	30.41	24.64	26.77	32.16	20.40	28.35	30.55	20.61	26.96
Mother's education(%)									
Low	47.01	49.41	41.80	15.27	54.20	31.20	33.20	67.22	41.56
Medium	42.11	22.45	40.32	70.86	20.92	43.98	52.51	26.24	41.56
High	5.50	19.45	13.22	7.49	11.18	14.30	9.29	3.85	10.23
NA	5.38	8.69	4.67	6.37	13.70	10.52	5.00	2.68	6.65
Father's education(%)									
Low	26.22	39.59	40.80	7.41	42.40	33.51	26.23	49.57	33.03
Medium	55.91	23.51	39.77	64.24	25.09	32.09	53.90	36.04	42.68
High	6.51	21.70	10.04	10.80	11.44	10.96	9.00	5.44	10.24
NA	11.35	15.20	9.40	17.55	21.07	23.44	10.88	8.94	14.06
Siblings									
no siblings	10.81	10.01	13.03	18.71	7.01	17.35	8.47	15.90	12.72
1	31.66	31.33	56.34	52.15	28.95	44.47	32.05	33.36	39.78
2	24.19	23.39	14.38	21.03	27.10	20.74	24.46	21.85	21.74
3 (or more)	33.33	35.27	16.25	8.11	36.94	17.44	35.02	28.89	25.76
Respondent's education(%)									
Low	8.84	23.14	25.87	22.97	18.80	13.76	8.56	22.59	18.11
Medium	75.15	39.21	64.03	64.53	52.55	67.27	69.27	67.26	63.53
High	16.01	37.65	10.10	12.50	28.65	18.97	22.17	10.15	18.37
Respondent's field (%)[a]									
General	8.36	19.07	10.68	12.17	1.34	26.68	8.06	7.47	11.23
Hum&Art	1.73	17.45	1.06	1.66	2.27	1.82	1.59	0.23	2.78
SocScien& BusLaw	15.53	12.70	5.34	12.62	22.00	7.37	11.20	1.94	10.36
Science&Tech	52.21	18.32	39.51	38.62	51.16	35.23	55.95	52.06	44.17
Agriculture	5.68	1.63	4.44	4.26	4.43	6.00	6.09	5.40	4.89
Education	1.37	4.82	1.74	2.07	0.00	0.59	1.18	2.49	1.71
Health&Welf	0.48	2.69	0.48	2.03	0.00	1.82	1.29	7.04	2.01
Services	5.79	0.19	10.88	3.60	0.00	6.73	6.09	0.78	4.74
Type of field (%)[a]									
Male-dominated	52.21	19.95	43.95	38.62	51.16	35.23	55.95	57.47	45.79
Balanced	21.21	31.77	10.88	20.03	4.43	32.68	6.09	8.24	15.23
Female-dominated	17.74	25.14	19.31	18.38	25.61	18.33	29.40	11.70	20.88
Man's potential (mean)	6.03	6.56	5.34	5.46	6.00	4.93	6.88	4.89	5.76
Age at graduation (mean)	20.28	20.54	18.09	18.63	19.65	20.60	20.16	18.42	19.42
Age at first birth (mean)	27.97	28.83	25.01	25.83	28.20	25.97	26.70	25.93	26.60
N	1674	1599	3108	2416	1941	2035	3401	2572	18746

Notes: a) Low educated group is a separate category; *Source*: own calculations on GGS data

Table 2.2 Description of the female sample by country

	Austria	Belgium	Bulgaria	CzechR.	France	Lithuania	Poland	Romania	Total
Cohort(%)									
1960-1969	31.28	40.20	35.98	31.52	38.77	41.57	32.43	41.72	36.02
1970-1979	40.00	34.29	38.90	38.06	35.63	32.79	37.58	39.99	37.50
1980-1987	28.72	25.51	25.12	30.43	25.60	25.64	29.99	18.29	26.49
Mother's education(%)									
Low	45.84	45.05	40.25	17.14	51.12	34.76	34.96	68.59	41.61
Medium	43.83	26.30	41.79	70.24	24.46	43.53	53.44	24.60	42.32
High	6.04	18.36	13.55	7.08	11.13	13.68	7.14	3.59	9.76
NA	4.30	10.30	4.41	5.53	13.29	8.03	4.45	3.22	6.31
Father's education(%)									
Low	26.11	37.78	38.10	8.47	42.06	34.30	27.38	51.66	32.81
Medium	54.44	22.07	40.58	64.12	22.74	31.93	54.57	36.04	42.59
High	8.17	21.57	10.58	10.23	12.74	10.45	6.41	5.08	10.09
NA	11.28	18.58	10.74	17.18	22.46	23.33	11.65	7.22	14.52
Siblings									
no siblings	7.97	9.57	12.26	17.77	6.86	15.24	8.06	13.62	11.09
1	31.24	30.69	55.59	51.17	30.07	44.98	29.44	32.32	38.57
2	26.43	23.93	14.99	21.37	27.71	22.23	24.16	22.83	22.62
3 (or more)	34.36	35.81	17.16	9.68	35.36	17.55	38.34	31.23	27.72
Respondent's education(%)									
Low	14.20	19.03	23.88	20.58	16.90	7.45	7.96	29.51	17.30
Medium	68.40	36.54	58.40	69.57	46.41	66.34	64.46	60.69	59.59
High	17.40	44.43	17.71	9.85	36.69	26.21	27.58	9.80	23.11
Respondent's field (%)[a]									
General	10.30	19.82	16.67	10.18	1.41	24.54	11.07	7.67	12.18
Hum&Art	3.83	8.22	2.67	1.42	7.92	4.56	3.87	2.36	4.14
SocScien& BusLaw	32.86	8.28	13.20	36.04	52.57	20.21	27.17	2.95	24.78
Science&Tech	7.30	18.41	24.68	14.88	20.03	19.11	22.43	41.44	21.20
Agriculture	1.66	7.77	2.09	2.98	1.18	3.52	5.94	5.86	3.75
Education	8.44	11.94	5.45	6.54	0.00	6.70	5.34	7.35	6.12
Health&Welf	5.80	6.42	2.89	5.11	0.00	8.66	4.79	1.68	4.16
Services	15.62	0.11	8.46	2.26	0.00	5.25	11.44	1.18	6.36
Type of field (%)[a]									
Male-dominated	7.30	26.18	26.78	14.88	20.03	19.11	22.43	47.30	22.87
Balanced	34.52	28.10	8.46	15.42	1.18	28.06	5.94	8.85	14.48
Female-dominated	43.98	26.69	40.88	49.12	61.90	45.38	63.67	14.34	45.36
Women's potential (mean)	4.77	5.37	3.71	4.30	4.26	3.92	5.44	3.46	4.43
Age at graduation (mean)	19.77	20.30	18.28	18.47	19.88	20.94	20.45	18.19	19.47
Age at first birth (mean)	25.55	26.82	22.20	23.29	25.95	24.69	24.42	22.92	24.28
N	2535	1776	3630	2386	2551	1732	3821	2203	20634

Notes: a) Low educated group is a separate category; *Source*: own calculations on GGS data

Table 2.3 Number of events by country

Male	Austria	Belgium	Bulgaria	CzechRep	France	Lithuania	Poland	Romania	Total
N at risk of first child	1674	1599	3108	2416	1941	2035	3401	2572	18746
N first births	777	829	1475	816	890	1003	2030	1414	9234
N second births	469	580	804	514	630	533	1229	705	5464
N third births	141	198	133	109	210	103	385	151	1430
Female	Austria	Belgium	Bulgaria	CzechRep	France	Lithuania	Poland	Romania	Total
N at risk of first child	2535	1776	3630	2386	2551	1732	3821	2203	20634
N first births	1555	1186	2329	1300	1441	1051	2785	1564	13211
N second births	1065	769	1361	782	1019	548	1775	831	8150
N third births	351	268	234	183	388	98	627	205	2354

Source: own calculations on GGS data.

Analytical strategy

We apply piecewise linear hazard models to estimate the effect of educational characteristics on first, second and third birth rates, separately for men and women, estimated using the aML software (Lillard and Panis 2003). When studying the effect of education on higher order births, several scholars argued that is important to account for the selection into parenthood (Kravdal 2001; 2007; Kreyenfeld 2002). Following Kravdal (2001), to a have a purer estimate of the effect of education on the birth rate of interest, we controlled for the selectivity into parenthood by modeling first, second and third birth jointly, where birth episodes are nested within individuals. The system of equations can be formally displayed as follows:

$$\ln h(t)^1 = \gamma' T(t) + \beta' X(t) + \varepsilon$$

$$\ln h(t)^2 = \gamma' T(t) + \beta' X(t) + \varepsilon$$

$$\ln h(t)^3 = \gamma' T(t) + \beta' X(t) + \varepsilon$$

The superscripts *1*, *2* and *3* refer to the equation for the first, second and third birth, respectively and $\ln h(t)$ is the log-hazard of occurrence at time *t*. In the equation for first birth, $\gamma' T(t)$ is a piecewise linear transformation of time since graduation, with nodes at 2, 4, 6, 10, and 15 years. For the second and third birth, $\gamma' T(t)$ is a piecewise linear transformation of time since previous birth, with nodes at 2, 4, 6 and 11 years. The covariate profile (both for fixed and time-varying covariates) is given by $\beta' X(t)$, which shifts the baseline hazard up or down. The random variable ε represents an unobserved factor, which is assumed to be normally distributed with mean 0 and variance σ^2 which will be estimated (in our models it ranged between 0.65 and 0.82). The distribution of ε is approximated by ten integration points in our models. Separate modeling for each birth transition would consist in excluding ε in each

equation. The unobserved factors at individual level can be several things, such as physical attractiveness or fecundity. To take into account the unobserved factors related to the countries' characteristics, instead, we used a country-fixed effect approach by estimating countries' dummies in all our models (Wooldridge 2010; Bryan and Jenkins 2015).

Results

We first discuss the results for the transition to parenthood for men and women, followed by a discussion about the findings for higher order births. For each parity, we refer to five models. In the first model (M1) we assess the effect of the level of education, accounting for the control variables. Our control variables are: time since graduation (time since previous birth for models of higher order births); birth cohort; age at graduation and its square (age at first birth for higher order births); educational attainment of respondent's parents; respondent's number of siblings; and country of survey. Overall, the effects of control variables (showed in Appendix 2.B) tend to be in line with expectations, however, we only discuss in detail the variables of major interest for this paper, i.e. the level of education and characteristics of the field of study.

In the second model (M2) we show the effect of the earning potential without educational level. Next, we include both educational level and earning potential in model three (M3). In order to address how the selection into union may affect the results, we included union status combined with the partner's education in the fourth model (M4). Further, to test our hypothesis about the role of the type of field (*hypothesis 3*), we ran models without the low educated group (M5). We end up our result-section with a comparison between joint and separate models. In general, our results show that gender differences mainly concern first birth rates, whereas for higher order births, the effect of educational characteristics seems to be more similar between genders.

First child

The effect of educational level is positively associated with the transition to first birth for men (Table 2.3 – M1), as expected. Ceteris paribus, highly educated men have around a 17% higher hazard of first birth compared to medium educated men, our reference category. The effect of educational level remains even after controlling for the earning potential by field of study; however, once we include the variable of union formation in the equation, the educational level is no longer significant. With regard to the first birth of women, we initially

do not find any educational gradient (Table 2.4 – M1); the expected negative gradient shows up only once we controlled for partnership formation. Highly educated women turned out to have a 17% lower hazard of first birth than medium educated women.

The earning potential by field of study, instead, does not seem to play a role with regard to first birth. We observe that without including the level of education (M2), the earning potential has a positive sign for men, despite not being statistically significant. This means that fields of study with higher earning potentials, compared to the mean of the country, tend to have higher rates of fatherhood. Once we control for union status and partner's education, the earning potential turns out to be negatively associated with men's first birth rates.

Table 2.3 Regression coefficients from estimated joint model, men's first birth

	M1		M2	M3		M4		M5	
Education (Ref. Medium)									
Low	-0.124	**		-0.162	**	-0.260	***		
	(0.047)			(0.061)		(0.063)			
Higher	0.163	**		0.168	**	-0.051		-0.046	
	(0.057)			(0.057)		(0.057)		(0.061)	
Earning potential			0.017	-0.032		-0.072	*	-0.053	
			(0.025)	(0.033)		(0.033)		(0.039)	
Partnership status (Ref. Not in union)									
Low edu partner						3.390	***	3.256	***
						(0.050)		(0.067)	
Medium edu partner						3.097	***	3.044	***
						(0.034)		(0.036)	
Highly edu partner						2.968	***	2.939	***
						(0.045)		(0.047)	
In union missing edu partner						1.391	***	1.245	***
						(0.072)		(0.083)	
Type field (Ref. Male-dominated)									
Balanced								0.030	
								(0.042)	
Female-dominated								-0.063	
								(0.043)	

Note: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%. Additional controls: duration splines, age at completion of education, cohorts, father's and mother's education, number of siblings, country dummies.

Table 2.4 Regression coefficients from estimated joint model, women's first birth

	M1	M2	M3	M4		M5	
Education (Ref. Medium)							
Low	0.043		0.020	0.070			
	(0.038)		(0.045)	(0.049)			
Higher	-0.021		-0.020	-0.188	***	-0.161	***
	(0.044)		(0.044)	(0.044)		(0.047)	
Earning potential		-0.027	-0.022	-0.016		-0.012	
		(0.018)	(0.020)	(0.021)		(0.026)	
Partnership status (Ref. Not in a union)							
Low edu partner				2.481	***	2.318	***
				(0.044)		(0.061)	
Medium edu partner				2.407	***	2.395	***
				(0.027)		(0.030)	
Highly edu partner				2.440	***	2.440	***
				(0.040)		(0.041)	
In union missing edu partner				1.749	***	1.675	***
				(0.049)		(0.057)	
Type of field (Ref. Male-dominated)							
Balanced						-0.023	
						(0.042)	
Female-dominated						0.001	
						(0.037)	

Note: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%. Additional controls: duration splines, age at completion of education, cohorts, father's and mother's education, number of siblings, country dummies.

Higher order births

For men's transition to higher order births, i.e., second and third births, we found a different educational gradient than first birth rates. Before controlling for the earning potential (Table 2.5 M1), low educated men have higher second- and third birth rates compared to the medium educated men, which is in contrast with our hypothesis 1b, according to which a higher level of education positively affects higher order birth rates via an income effect. Once we control for the earning potential (Table 2.5 M3), a positive effect of education shows up on second birth rates and it remains once we control for partnership status (Table 2.5 M4). The earning potential of the field, unexpectedly, has a negative effect on the transition to second birth, even when we do not consider the low educated group in our model (Table 2.5 M5).

These results suggest that a higher earning potential for men is not conducive to fertility and that opportunity costs show up for men too. On one hand, it is possible that the positive income effect for men, which we expected, is embedded in the level of education (M3 and M4), since some fields of study may have different, education level-dependent earning potentials (cf. Figure 2.A1 in the Appendix). On the other hand, it is plausible that the positive effect of educational level that we observed in M3 and M4 indicates other aspects of

education. For instance, a cultural dimension of education, according to which highly educated men tend to show more gender egalitarian attitudes and are more willing to share housework with their partners, may have positive effects for fertility (Sullivan et al. 2014).

With regard to men's third birth rates, the results do not support our hypotheses *1b* and *2*, according to which a higher level of education and a higher level of earning potential are positively associated with higher order birth rates. Our findings show that low educated men tend to have higher third birth rates than medium educated men. Furthermore, we found that men that graduated in balanced fields of study (40-60% share of women) have higher third birth rates than men who choose male-dominated fields; this finding is not in line with our third hypothesis, according to which men that graduated in male-dominated fields have higher birth rates than their counterparts that graduated in female-dominated fields or balanced fields of study. This is probably because the group of men in balanced fields of study mostly graduated from agriculture-related disciplines. Lappegård et al. (2011) speculated that men who choose to study agriculture have a more traditional life style and tend to be more family-prone.

Concerning the results for women, we found that the educational gradient in second-birth rates follows a U-shaped effect, since both low and highly educated women have higher fertility than medium educated women (Table 2.6 M1). When we include the earning potential, which has a negative effect, highly educated women have higher second birth rates than the reference category (Table 2.6 M3). As shown in M4, this positive effect is probably a result of assortative mating, i.e., a "partner effect." Since educational homogamy is very strong, a positive effect of education for men drives the positive effect of education for women if we do not control for partnership status. As expected, a higher-than average earning potential has a strong negative effect on the transition to second and third births, which is consistent across all models. Finally, we found no evidence that would support the third hypothesis, which was about the role of the field of study's gender composition for women.

Table 2.5 Regression coefficients from joint model, men's higher order births

Second birth	M1		M2		M3		M4		M5	
Education (Ref. Medium)										
Low	0.184	***			-0.012		-0.029			
	(0.048)				(0.070)		(0.071)			
Higher	0.075				0.108	*	0.113	*	0.049	
	(0.054)				(0.055)		(0.058)		(0.059)	
Earning potential			-0.158	***	-0.167	***	-0.149	***	-0.181	***
			(0.030)		(0.043)		(0.043)		(0.050)	
Partnership status (Ref. Not in a union)										
Low edu partner							1.960	***	1.810	***
							(0.110)		(0.131)	
Medium edu partner							1.668	***	1.620	***
							(0.104)		(0.118)	
Highly edu partner							1.696	***	1.624	***
							(0.111)		(0.125)	
In union missing edu partner							0.610	***	0.502	**
							(0.139)		(0.160)	
Type of field (Ref. Male-dominated)										
Balanced									0.026	
									(0.052)	
Female-dominated									-0.034	
									(0.053)	
Third birth	M1		M2		M3		M4		M5	
Education (Ref. Medium)										
Low	0.601	***			0.481	***	0.274	*		
	(0.076)				(0.127)		(0.130)			
Higher	0.089				0.105		0.185		0.071	
	(0.101)				(0.102)		(0.109)		(0.112)	
Earning potential			-0.374	***	-0.103		-0.107		-0.162	
			(0.055)		(0.087)		(0.090)		(0.104)	
Partnership status (Ref. Not in a union)										
Low edu partner							1.512	***	1.337	***
							(0.202)		(0.239)	
Medium edu partner							0.841	***	0.756	***
							(0.198)		(0.224)	
Highly edu partner							0.847	***	0.707	**
							(0.215)		(0.239)	
In union missing edu partner							0.494		0.499	
							(0.264)		(0.290)	
Type of field (Ref. Male-dominated)										
Balanced									0.219	*
									(0.098)	
Female-dominated									-0.011	
									(0.101)	
ln-L	-95277		-95286		-95267		-87787		-71699	

Note: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%. Additional controls: duration splines, age at first birth, cohorts, father's and mother's education, number of siblings, country effects.

Table 2.6 Regression coefficients from joint model, women's higher order births

Second birth	M1		M2		M3		M4		M5	
Education (Ref. Medium)										
Low	0.172	***			0.051		0.126	*		
	(0.039)				(0.048)		(0.050)			
Higher	0.129	**			0.148	**	0.049		-0.005	
	(0.045)				(0.045)		(0.048)		(0.050)	
Earning potential			-0.114	***	-0.105	***	-0.111	***	-0.119	***
			(0.020)		(0.025)		(0.025)		(0.031)	
Partnership status (Ref. Not in a union)										
Low edu partner							1.493	***	1.447	***
							(0.064)		(0.085)	
Medium edu partner							1.418	***	1.523	***
							(0.056)		(0.068)	
Highly edu partner							1.537	***	1.620	***
							(0.067)		(0.077)	
In union missing edu partner							0.694	***	0.738	***
							(0.079)		(0.095)	
Type of field (Ref. Male-dominated)										
Balanced									0.046	
									(0.051)	
Female-dominated									0.013	
									(0.045)	
Third birth	M1		M2		M3		M4		M5	
Education (Ref. Medium)										
Low	0.684	***			0.545	***	0.464	***		
	(0.059)				(0.079)		(0.081)			
Higher	0.036				0.056		-0.011		-0.113	
	(0.082)				(0.083)		(0.089)		(0.095)	
Earning potential			-0.344	***	-0.124	**	-0.128	**	-0.162	**
			(0.038)		(0.046)		(0.047)		(0.058)	
Partnership status (Ref. Not in a union)										
Low edu partner							1.124	***	1.093	***
							(0.109)		(0.159)	
Medium edu partner							0.560	***	0.768	***
							(0.100)		(0.135)	
Highly edu partner							0.799	***	1.009	***
							(0.119)		(0.151)	
In union missing edu partner							0.289	*	0.455	*
							(0.146)		(0.188)	
Type of field (Ref. Male-dominated)										
Balanced									0.015	
									(0.090)	
Female-dominated									0.096	
									(0.083)	
ln-L	-132307		-132325		-132295		-125571		-97817	

Note: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%. Additional controls: duration splines, age at first birth, cohorts, father's and mother's education, number of siblings, country effects.

The role of unobserved heterogeneity

In Appendix 2.C we report a comparison of the main joint models (M 4) with the full models which do not include the unobserved heterogeneity term. In line with previous findings (Kravdal 2001; 2007; Kreyenfeld 2002), our results showed that selection into parenthood is an important factor to consider when studying the effect of education on higher order births. The selection into parenthood also needs to be considered when men are the unit of analysis. If we failed to control for constant-unobserved factors, such as physical attractiveness or fecundity, we would have overestimated the positive effect of high education on second and third birth rates for men as well as for women. For the latter, the separate modeling hides the negative educational gradient in second birth rates, which shows up once we include the partnership status.

It is likely that for some unobserved reasons, some highly educated individuals had their first birth earlier and had more time to get into the second birth. On the other hand, some of the medium-educated group may have had their first child later than average, having less time for the second birth compared to their highly educated peers. Controlling for this selection process means that we accounted for exceptional highly educated individuals who leave the group at risk earlier than the average for their group, and exceptional medium educated individuals who stay longer than average at risk of first birth.

Furthermore, accounting for unobserved heterogeneity of the population at risk had some repercussions with regard to the earning potential but to a lesser extent than education. Concerning men's birth rates, we found that separate modeling would have underestimated the negative effect of earning potential for the transition into fatherhood. Regarding women's birth rates, the absence of unobserved heterogeneity would have led to underestimating the negative effect of earning potential for the transition to third birth.

Discussion

The aim of this paper was to analyze gender differences in the effect of education on fertility. We have considered education as a multi-dimensional concept, accounting for the level of education, the field of study, and its characteristics. We ran separate models for men and women, and we estimated the effect of education on the transition to first, second, and third births jointly, pooling eight European countries together.

We especially aimed to test predictions derived from micro-economic theories of the family, according to which opposite effects link education to fertility for men and women.

Our results showed that traditional differences between genders describe the dynamics related to the effect of education, especially on first births, rather than higher order births. However, to a lesser extent, this dynamic can be applied to the role of earning potential by field, since the effect for men and women pointed in the same direction. According to our first hypothesis (1a), a positive effect of education, driven by an income effect, is expected for men's transition into parenthood, whereas a negative effect, driven by opportunity costs, is expected for the transition into motherhood. In line with our hypothesis, we found a positive educational gradient in men's first birth rates; in contrast, we found an unexpected flat gradient in women's rates.

A key variable to understand the results regarding the transition into parenthood is partnership status. Once we control for union status and partner's education, the effect of the educational level is not statistically significant anymore for men. For women, the association with first birth rates turns negative, as expected. These results highlight the importance of the selection into union for men and, expectedly, for women (cf. Trimarchi and Van Bavel 2015). Highly educated men are more likely to enter into a union, perhaps because they are more attractive on the mating market; this, in turn, accelerates their transition to first birth. For women, it is possible that the role of assortative mating emerges, since highly educated women tend to be partnered with highly educated men. If we do not include union status in the model, the estimates of women's education may embed the positive effect of men's education and, as a result, we get a flat educational gradient. However, it is also plausible that, at least in some of the contexts considered, the selection-into-union hypothesis holds for women as well: a topic that deserves further investigation in the future.

The so-called *partner effect* stands out stronger for women's second birth rates, in line with previous studies (Kreyenfeld 2002). After controlling for partner's education, the positive effect of women's education on second births disappears. With regard to third births, instead, we observed a negative educational gradient, both for women and men. Overall, these results are in contrast with our hypothesis 1b about the effect of educational level on higher order births. We expected a positive effect of educational level for higher order births for both women and men, according to which highly educated individuals may be in a better position to face the cost of children. We found support for this hypothesis only with regard to men's transition to second births, since the positive effect of education on women's second birth rates is mostly driven by partnership status. It remains unclear, however, to what extent the positive effect of education on men's second-birth rates can be interpreted as an income effect

or if it is rather driven by attitudes towards the egalitarian gender roles of the more educated (cf. Kravdal and Rindfuss 2008; Sullivan et al. 2014).

Next, we found only partial evidence for our second hypothesis, which concerns the role of the earning potential by field of study. According to hypothesis 2, a higher earning potential is associated with higher fertility for men but lower fertility for women. Our findings are in line with our hypothesis with regard to women, but not with regard to men. Unexpectedly, we found a negative effect of earning potential on men's birth rates, which is particularly stronger for second order births. We speculate that men who desire a second child are more inclined to be more involved in housework. Since both the economic burden and the time invested in childrearing increase with a second child, both women and men need to be involved in housework, this is why opportunity costs show up for men too.

Finally, we did not find strong evidence for our third hypothesis. According to hypothesis 3, study disciplines with a higher share of one's own sex would enhance fertility. We tested this hypothesis by focusing on the sample which did not include the low educated respondents. In general, the signs of the effects are in line with our third hypothesis; however, the effects were not significant for either men or women.

We should mention some limitations of this study. First, due to the smaller sample size of the higher order births, we could not estimate the effect of education and field of study on fertility separately by country. Moreover, due to the low number of countries, we were not able to run multilevel models, which would have improved our knowledge on the role of different contexts for the relationship between education and fertility. As previous studies have shown, the presence of childcare facilities enhances second birth rates, particularly for highly educated women (Van Bavel and Różańska-Putek 2010). On the other hand, our findings are not limited to one country or only a couple of countries, which is an improvement over previous studies (cf. Oppermann 2014).

Finally, given the limitations of the data, we had to proceed from rather broad categories of fields of study. A particularly unfortunate example of this is that we had to group individuals who graduated in business and management in the same category as those who followed cultural studies, even though these groups tend to have diverging earning potentials. Still, previous studies have rarely been able to estimate the earning potential of study disciplines at all. Following Van Bavel (2010), we have been able to do so while at the same time accounting for differences by country and sex.

Overall, it is clear that studying the effect of education on fertility without considering union status is problematic. As shown by Trimarchi and Van Bavel (2015), the selection into union strongly affects the role of education on childbearing for men and, expectedly, for women. The selection into union may even affect the role of educational field on childbearing, since the field of study may be associated with the probability of being in a union (Cooney and Ulhberg 1989; Martín-García et al. 2016). Future research may focus on ways to better estimate the effect of education on correlated processes, i.e., childbearing, union formation, and dissolution. In particular, the ideal would be to jointly analyze fertility and partnership histories by taking into account those factors (observed and unobserved) that commonly affect family formation behavior. Next, it is also desirable that future studies on fertility (re)consider the role of men. While scholars have kept track of women's family behavior and how things have changed for women because of their increasing involvement in higher education and ensuing labor force participation, much less is known about men's family behavior. To some extent, as also shown from this study, men's and women's family behavior is more similar than we may expect. Scholars have suggested that the societal changes that occurred in the last three decades may lead to a stronger role for men in fertility decision-making (Van Bavel 2012; Huinink and Kohli 2014), which we may not notice if we keep focusing only on women.

Appendices

Appendix 2.A Estimation of the earning potential: OLS regressions results

We estimated the earning potential by field of study, country, and sex using European Labor Force Survey (EU-LFS) data. The EU-LFS is a large household survey that collects information about the labor participation of people aged 15 years and older living in private households. We used data from 2009-2013 surveys because only since 2009 the information about the income is collected in the EU-LFS. The income variable is categorized in income deciles and is not applicable to all the respondents. Income is gathered only for individuals that in the reference week declared that they were employees. The field of study variable, instead, was collected only for those individuals who reached an upper secondary level of educational attainment (ISCED >=3).

To estimate the earning potential by field of study, we selected only individuals without missing values for the income variable. We considered individuals in the age group 20-64. Moreover, we only included those who declared that they were working full-time. The variable of field of study refers to the main discipline of the highest level of education attained (declared at interview); Table 2.A1 describes each category. By means of OLS regressions, we estimated the average income deciles of each group defined by field – country and sex. The following equation shows the estimated model:

$$y(deciles) = \alpha + \beta_1(age) + \beta_2(age^2) + \beta_3(years\ since\ start\ current\ work) + \beta_4(educational\ level) + \beta_5(year\ of\ survey)$$

All the OLS regressions were estimated pooling the EU-LFS data from 2009-2013[7]. The tables that follow show the results of the OLS regressions for each combination of country, field of study, and sex. The age was centered at age 22, which is the midpoint of the youngest age group, α represents the constant of the equation, i.e., people aged 20-24 years old with a medium level of education, who were surveyed in 2009, and who started current work in the same year of the survey. In our analyses, we used the predicted values of earning potential for people aged 50-54 years old:

$$y = \alpha + \beta_1(age) + \beta_2(age^2)$$

Figure 2.A1 shows the predicted values of income deciles for the age group of 50-54, according to the level of education.

[7] Austria and Czech Republic; only 2009-2012, since 2013 was not available.

Table 2.A1 Categorization of the field of study

Categories	Description
General/unspecified field	General programmes, basic/broad programmes; literacy and numeracy; personal skills; unknown and unspecified
Humanities and Arts	Humanities, languages and arts; Fine Arts; Music and performing arts; Audio-visual techniques and media production; Design; Craft skills; Religion; Foreign languages; Mother tongue; History, philosophy and related subjects; History and archaeology; Philosophy and ethics
Education	Teacher training and education science; Teaching and training; Education science; Training for pre-school teachers; Training for teachers at basic levels; Training for teachers with subject specialization; Training for teachers of vocational subjects
Social Sciences/Business/Law	Social and behavioral sciences; Psychology; Sociology and cultural studies; Political sciences and civics; Economics; Journalism and information; Journalism and reporting; Library, information and archive; Business and administration; Wholesale and retail sales; Marketing and advertising; Finance, banking and insurance; Accounting and taxation; Management and administration; Secretarial and office work; Working life; Law
Science and Technology	Science, mathematics and computing; Life science; Biology and biochemistry; Environmental science; Physical science; Physics; Chemistry; Earth science; Mathematics and statistics; Computing; Computer science; Computer use; Engineering, manufacturing and construction; Engineering and engineering trades; Mechanics and metal work; Electricity and energy; Electronics and automation; Chemical and process; Motor vehicles, ships and aircraft; Manufacturing and processing; Food processing; Textiles, clothes, footwear, leather; Materials (wood, paper, plastic, glass); Mining and extraction; Architecture and building; Architecture and town planning; Building and civil engineering
Agriculture	Agriculture and veterinary; Agriculture, forestry and fishery; Crop and livestock production; Horticulture; Forestry; Fisheries; Veterinary
Health and Welfare	Health and welfare; Health Medicine; Medical services; Nursing and caring; Dental studies; Medical diagnostic and treatment technology; Therapy and rehabilitation; Pharmacy; Social services; Child care and youth services; Social work and counseling
Services	Personal services; Hotel, restaurant and catering; Travel, tourism and leisure; Sports; Domestic services; Hair and beauty services; Transport services; Environmental protection; Environmental protection technology; Natural environments and wildlife; Community sanitation services; Security services; Protection of persons and property; Occupational health and safety; Military and defense
Not applicable (Low educated)	People with highest level of education: ISCED <= 2

Table 2.A2 Austria, OLS coefficients estimates

Males

	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.182	0.131	0.186	0.229	0.101	0.183	0.203	0.141	0.131
Age squared	-0.004	-0.003	-0.003	-0.005	-0.003	-0.004	-0.005	-0.004	-0.003
Start current work	0.109	0.075	0.042	0.069	0.069	0.084	0.079	0.101	0.091
High education	2.061	1.054	1.224	1.649	1.438	0.987	1.715	1.363	
Year	-0.065	-0.011	-0.081	0.002	0.027	-0.076	-0.033	0.012	-0.022
Constant α	4.573	4.642	4.335	4.474	5.263	3.538	4.609	4.069	3.454
Observations	1155	628	570	4270	16070	638	592	1533	2814
R-squared	0.35	0.23	0.42	0.39	0.23	0.33	0.41	0.27	0.28

Females

	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.170	0.079	0.106	0.138	0.036	0.076	0.076	0.125	0.113
Age squared	-0.004	-0.001	-0.001	-0.003	-0.001	-0.002	-0.001	-0.003	-0.002
Start current work	0.117	0.096	0.067	0.087	0.093	0.088	0.067	0.072	0.062
High education	NA	2.188	0.888	2.136	2.483	1.959	1.536	1.405	
Year	-0.056	0.127	0.065	0.051	0.036	0.251	0.091	-0.030	0.015
Constant α	3.729	3.010	4.303	3.929	4.101	3.040	4.935	3.760	2.450
Observations	860	487	1399	4887	1037	191	1353	2331	1959
R-squared	0.35	0.46	0.51	0.32	0.34	0.32	0.25	0.16	0.20

Table 2.A3 Belgium, OLS coefficients estimates

	Males								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.185	0.182	0.241	0.214	0.167	0.150	0.185	0.151	0.146
Age squared	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.003	-0.002	-0.002
Start current work	0.044	0.035	0.010	0.016	0.030	0.031	0.020	0.045	0.029
High education	2.052	1.726	1.183	2.025	2.338	2.414	1.790	1.968	
Year	0.004	-0.059	-0.002	-0.021	0.032	-0.017	0.001	0.058	0.043
Constant α	3.854	3.824	3.379	3.828	3.884	3.353	3.831	3.687	3.386
Observations	9145	2993	2309	11051	31792	1415	2515	2808	18259
R-squared	0.38	0.38	0.50	0.43	0.46	0.47	0.48	0.38	0.20

	Females								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.164	0.193	0.195	0.179	0.147	0.192	0.152	0.132	0.070
Age squared	-0.002	-0.003	-0.003	-0.003	-0.002	-0.002	-0.002	-0.002	-0.001
Start current work	0.041	0.027	0.033	0.026	0.029	0.020	0.026	0.024	0.035
High education	2.305	2.624	1.612	2.414	3.372	2.943	2.042	2.233	
Year	0.055	-0.063	0.025	-0.032	-0.018	-0.069	-0.018	0.035	0.039
Constant α	2.995	2.633	2.626	2.987	2.744	2.494	3.266	2.746	2.765
Observations	6086	3198	5632	12043	4158	268	7249	2492	5504
R-squared	0.32	0.45	0.50	0.39	0.46	0.48	0.44	0.38	0.13

Table 2.A4 Bulgaria, OLS coefficients estimates

	Males								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.043	0.073	0.118	0.106	0.065	0.039	0.006	0.099	0.071
Age squared	-0.002	-0.001	-0.002	-0.003	-0.002	-0.002	-0.001	-0.003	-0.002
Start current work	0.051	0.027	0.030	0.032	0.060	0.062	0.048	0.071	0.060
High education	1.662	0.909	-0.441	1.564	1.809	1.838	2.574	1.434	
Year	-0.130	-0.202	0.178	-0.172	-0.042	0.030	0.167	-0.076	-0.199
Constant α	5.869	5.886	5.154	5.753	5.588	4.788	4.856	5.368	4.334
Observations	4365	256	409	1344	13155	825	278	1242	3637
R-squared	0.04	0.07	0.06	0.12	0.11	0.11	0.10	0.15	0.04

	Females								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.010	0.022	0.072	0.074	-0.009	0.047	0.078	-0.029	0.002
Age squared	-0.001	-0.001	-0.001	-0.002	0.0002	-0.002	-0.002	0.0001	-0.001
Start current work	0.032	0.007	0.014	0.031	0.043	0.044	-0.005	0.015	0.022
High education	2.241	2.213	2.027	2.118	2.702	3.199	1.699	2.277	
Year	0.019	-0.062	0.139	-0.062	-0.006	-0.049	0.090	-0.079	-0.084
Constant α	4.118	4.923	2.717	4.122	4.138	3.240	3.621	4.855	3.077
Observations	6174	525	2014	4301	6334	475	1523	541	2618
R-squared	0.02	0.13	0.04	0.14	0.18	0.33	0.03	0.15	0.02

Table 2.A5 Czech Republic, OLS coefficients estimates

	Males								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.146	0.067	0.037	0.162	0.086	0.085	0.113	0.117	0.017
Age squared	-0.004	-0.001	-0.001	-0.003	-0.002	-0.002	-0.002	-0.003	-0.001
Start current work	0.051	0.036	0.028	0.005	0.037	0.025	0.030	0.063	0.041
High education	NA	1.398	0.891	2.085	2.485	1.925	2.642	2.432	
Year	-0.044	0.074	-0.136	-0.063	-0.043	-0.167	-0.074	-0.073	-0.068
Constant α	5.205	5.122	6.434	5.048	4.905	5.362	5.220	4.310	4.101
Observations	681	504	538	2296	23361	1694	438	2606	1287
R-squared	0.07	0.13	0.04	0.22	0.12	0.11	0.41	0.16	0.03

	Females								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.029	0.097	0.072	0.041	0.024	0.016	0.101	0.035	-0.035
Age squared	-0.001	-0.002	-0.001	-0.001	-0.001	0.0005	-0.002	-0.001	0.001
Start current work	0.052	0.039	0.022	0.046	0.041	0.065	0.034	0.061	0.021
High education	NA	2.788	1.708	2.772	3.253	3.404	0.915	2.885	
Year	0.029	-0.100	-0.074	-0.075	-0.009	-0.102	0.021	-0.133	-0.013
Constant α	4.379	3.652	4.657	3.968	3.524	3.768	5.242	3.623	3.513
Observations	1464	746	2253	8667	6403	1389	3051	2777	1951
R-squared	0.03	0.30	0.21	0.16	0.18	0.23	0.10	0.10	0.01

Table 2.A6 France, OLS coefficients estimates

	Males								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.186	0.177	0.131	0.244	0.161	0.113	0.203	0.197	0.119
Age squared	-0.004	-0.003	-0.003	-0.005	-0.003	-0.002	-0.003	-0.004	-0.002
Start current work	0.060	0.080	0.058	0.056	0.054	0.061	0.034	0.085	0.055
High education	1.931	0.811	1.216	1.644	2.134	1.626	2.134	1.549	
Year	-0.080	0.017	0.240	-0.045	-0.002	-0.063	-0.001	-0.048	-0.003
Constant α	4.187	3.498	4.033	3.565	4.078	3.773	3.314	3.587	3.686
Observations	665	2147	276	9833	30596	2099	1267	2040	14060
R-squared	0.23	0.29	0.38	0.35	0.32	0.31	0.47	0.32	0.14

	Females								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.072	0.125	0.103	0.141	0.114	0.129	0.092	0.112	0.038
Age squared	-0.001	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002	-0.002	-0.001
Start current work	0.075	0.111	0.095	0.079	0.087	0.088	0.064	0.054	0.070
High education	2.019	1.327	2.053	2.118	2.888	2.155	2.497	1.993	
Year	-0.111	-0.053	0.162	-0.054	0.002	-0.036	0.022	0.008	-0.004
Constant α	3.829	3.318	3.037	2.820	3.029	2.646	3.224	2.816	3.001
Observations	558	4388	579	18356	5198	465	6193	2442	8827
R-squared	0.22	0.37	0.47	0.31	0.39	0.28	0.49	0.26	0.15

Table 2.A7 Lithuania, OLS coefficients estimates

	Males								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.024	0.001	-0.059	0.105	0.050	0.027	0.091	0.033	-0.061
Age squared	-0.001	0.0003	0.001	-0.003	-0.001	-0.001	-0.001	-0.001	0.001
Start current work	0.095	0.042	0.066	0.108	0.083	0.096	-0.025	0.070	0.100
High education	NA	1.157	1.194	1.150	1.756	1.683	1.242	1.502	
Year	-0.009	-0.253	-0.026	-0.059	-0.085	0.210	-0.421	0.090	-0.049
Constant α	5.274	5.796	6.752	5.433	5.207	4.339	6.207	4.709	4.552
Observations	1553	139	151	500	4465	309	96	1146	354
R-squared	0.04	0.05	0.08	0.08	0.13	0.20	0.09	0.08	0.05

	Females								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	-0.028	0.128	0.119	0.090	0.027	0.016	0.030	-0.014	0.078
Age squared	0.0001	-0.003	-0.003	-0.002	-0.001	0.0004	0.0001	0.0001	-0.002
Start current work	0.052	0.066	0.061	0.059	0.063	0.065	-0.001	0.056	0.017
High education	NA	2.176	2.678	2.440	2.504	2.350	1.103	2.449	
Year	0.056	-0.093	-0.133	-0.039	0.030	0.201	-0.005	-0.040	-0.075
Constant α	4.119	2.838	3.177	3.253	3.640	2.979	4.891	3.790	3.312
Observations	1733	428	1156	2603	2159	428	1162	619	220
R-squared	0.03	0.15	0.18	0.18	0.24	0.21	0.05	0.18	0.04

Table 2.A8 Poland, OLS coefficients estimates

	Males								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.146	0.160	0.241	0.222	0.095	0.102	0.224	0.172	0.035
Age squared	-0.004	-0.003	-0.006	-0.005	-0.003	-0.003	-0.005	-0.004	-0.001
Start current work	0.076	0.032	0.040	0.032	0.053	0.063	0.019	0.050	0.055
High education	NA	1.298	1.203	1.440	2.126	1.859	1.752	1.735	
Year	-0.309	-0.133	-0.187	-0.278	-0.235	-0.144	-0.153	-0.280	-0.292
Constant α	6.624	5.674	5.164	5.948	6.261	5.791	5.371	5.915	5.725
Observations	3083	541	964	3585	26657	1951	503	1865	3095
R-squared	0.14	0.15	0.19	0.26	0.17	0.18	0.34	0.24	0.07

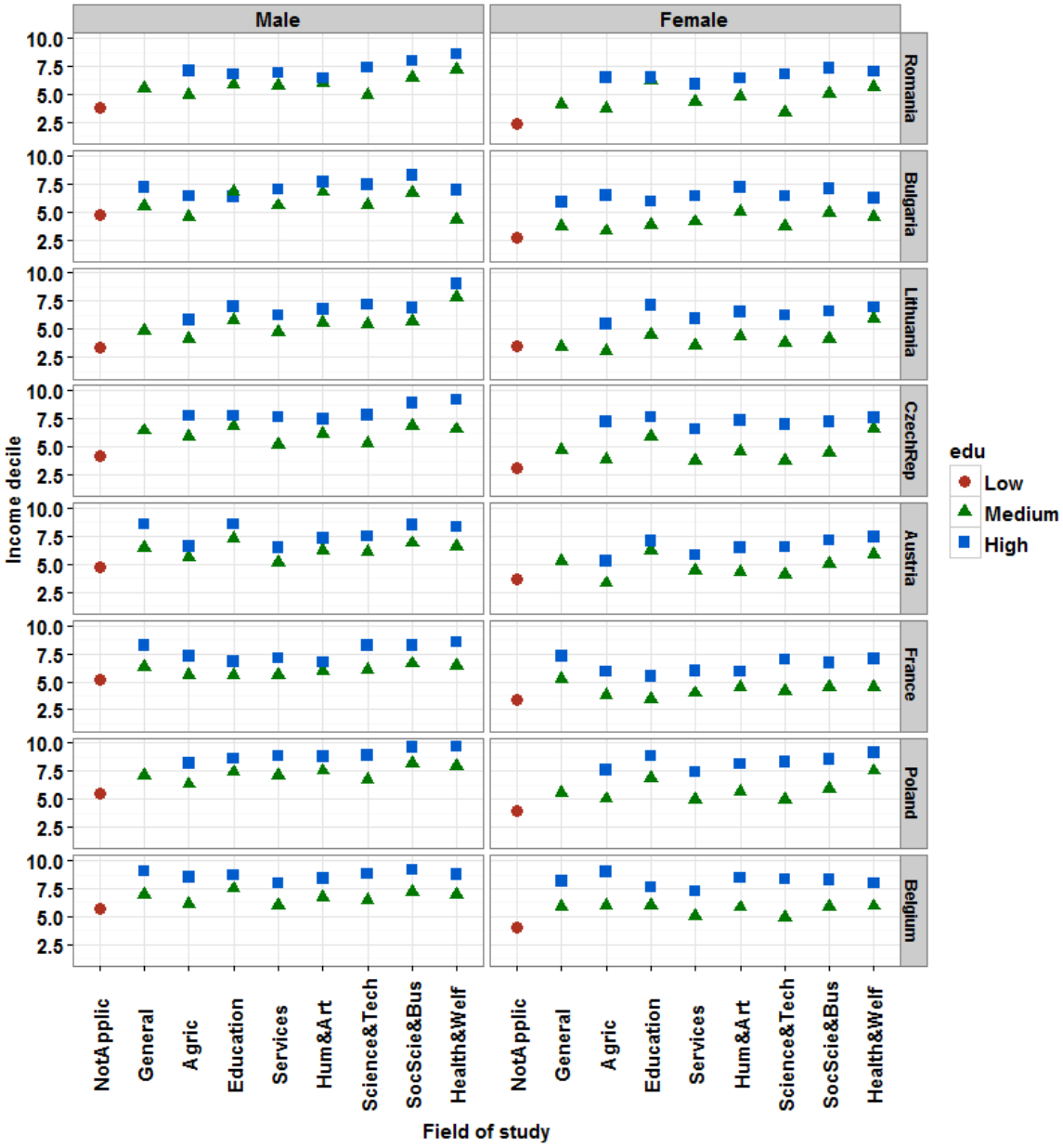
	Females								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.051	0.125	0.260	0.142	0.035	0.069	0.181	0.076	0.011
Age squared	-0.001	-0.003	-0.005	-0.003	0.0005	-0.001	-0.003	-0.002	-0.001
Start current work	0.077	0.062	0.023	0.065	0.061	0.073	0.023	0.055	0.037
High education	NA	2.457	1.958	2.660	3.369	2.590	1.639	2.478	
Year	-0.312	-0.194	-0.240	-0.291	-0.281	-0.340	-0.387	-0.332	-0.256
Constant α	5.031	4.408	3.363	4.072	4.325	4.010	5.200	4.351	4.126
Observations	3752	1371	3743	10877	7422	1844	3225	2876	1599
R-squared	0.15	0.20	0.33	0.32	0.36	0.28	0.24	0.20	0.07

Table 2.A9 Romania, OLS coefficients estimates

	Males								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	0.006	0.050	0.119	0.084	0.049	0.067	0.145	0.082	0.056
Age squared	0.0002	-0.001	-0.003	-0.002	-0.001	-0.001	-0.003	-0.002	-0.001
Start current work	0.045	0.036	0.082	0.017	0.065	0.043	0.004	0.066	0.048
High education	NA	0.457	0.885	1.574	2.430	2.240	1.397	1.164	
Year	-0.004	-0.014	-0.343	-0.126	0.018	0.098	-0.124	-0.026	0.039
Constant α	5.594	5.225	4.779	5.297	4.629	3.888	5.482	5.340	3.179
Observations	5266	723	203	3290	23570	1581	598	2801	3245
R-squared	0.02	0.04	0.22	0.08	0.15	0.15	0.11	0.09	0.03

	Females								
	General	Hum&Art	Education	Soc. Sciences Business&Law	Sciences&Tech	Agriculture	Health&Welf	Services	Low edu
Variables									
Age	-0.030	0.054	0.176	0.072	0.017	-0.005	0.083	0.075	-0.008
Age squared	0.001	-0.001	-0.003	-0.001	0.0004	0.001	-0.002	-0.001	0.0001
Start current work	0.049	0.056	0.050	0.028	0.062	0.058	0.042	0.053	0.033
High education	NA	1.680	0.280	2.318	3.417	2.802	1.312	1.595	
Year	0.044	-0.146	-0.155	-0.105	-0.007	0.011	-0.013	0.002	0.011
Constant α	4.249	3.920	4.036	3.770	3.207	3.241	4.685	3.278	2.707
Observations	5220	1304	1105	7140	11912	1057	2564	933	2521
R-squared	0.02	0.14	0.17	0.16	0.25	0.17	0.08	0.10	0.01

Figure 2.A1 Model-predicted values of income deciles (age group 50-54)



Source: own estimation on EU-LFS data 2009-2013

Appendix 2.B The effects of control variables

Table 2.B1 Regression coefficients for the transition to men's first births, control variables

	M1		M2		M3		M4		M5	
DurationSplines										
0-2	0.355	***	0.359	***	0.356	***	0.178	***	0.166	***
	(0.042)		(0.042)		(0.042)		(0.043)		(0.044)	
2-4	0.366	***	0.371	***	0.367	***	0.193	***	0.197	***
	(0.028)		(0.028)		(0.028)		(0.028)		(0.030)	
4-6	0.211	***	0.216	***	0.211	***	0.069	**	0.052	*
	(0.023)		(0.023)		(0.023)		(0.023)		(0.025)	
6-10	0.045	***	0.050	***	0.046	***	-0.030	*	-0.041	**
	(0.012)		(0.012)		(0.012)		(0.012)		(0.013)	
10-15	-0.093	***	-0.090	***	-0.093	***	-0.105	***	-0.105	***
	(0.013)		(0.013)		(0.013)		(0.013)		(0.015)	
15+	-0.157	***	-0.156	***	-0.157	***	-0.163	***	-0.174	***
	(0.016)		(0.016)		(0.016)		(0.016)		(0.021)	
Constant	-3.947	***	-3.881	***	-3.937	***	-4.745	***	-4.681	***
	(0.096)		(0.094)		(0.096)		(0.100)		(0.109)	
Cohort (Ref. 1970 - 79)										
1960-69	0.264	***	0.269	***	0.263	***	0.343	***	0.409	***
	(0.029)		(0.029)		(0.029)		(0.030)		(0.033)	
1980-87	-0.499	***	-0.509	***	-0.498	***	-0.515	***	-0.592	***
	(0.049)		(0.050)		(0.049)		(0.052)		(0.060)	
Age at graduation	0.039	***	0.053	***	0.039	***	-0.025	**	-0.030	***
	(0.009)		(0.007)		(0.009)		(0.008)		(0.008)	
Age at graduation2	-0.006	***	-0.006	***	-0.006	***	-0.003	***	-0.004	***
	(0.001)		(0.001)		(0.001)		(0.001)		(0.001)	
Father's education (Ref. Low)										
Medium	-0.006		-0.003		-0.006		-0.024		-0.034	
	(0.036)		(0.036)		(0.036)		(0.038)		(0.041)	
High	-0.230	***	-0.211	**	-0.228	***	-0.241	***	-0.263	***
	(0.067)		(0.068)		(0.068)		(0.067)		(0.069)	
Unknown	-0.071		-0.077		-0.070		-0.086		-0.099	
	(0.050)		(0.050)		(0.050)		(0.051)		(0.059)	
Mother's education (Ref. Low)										
Medium	-0.029		-0.023		-0.029		-0.085	*	-0.086	*
	(0.037)		(0.037)		(0.037)		(0.039)		(0.041)	
High	-0.073		-0.054		-0.074		-0.115		-0.088	
	(0.068)		(0.068)		(0.068)		(0.067)		(0.069)	
Unknown	-0.028		-0.028		-0.029		-0.075		-0.041	
	(0.062)		(0.063)		(0.062)		(0.065)		(0.074)	
N siblings (Ref. None)										
1	0.144	**	0.145	**	0.144	**	0.105	*	0.096	
	(0.047)		(0.048)		(0.047)		(0.049)		(0.052)	
2	0.412	***	0.417	***	0.411	***	0.290	***	0.273	***
	(0.050)		(0.051)		(0.051)		(0.052)		(0.055)	
3+	0.391	***	0.393	***	0.390	***	0.334	***	0.302	***
	(0.050)		(0.051)		(0.050)		(0.052)		(0.056)	
Country (Ref. Bulgaria)										
France	-0.593	***	-0.591	***	-0.598	***	-0.846	***	-0.836	***
	(0.054)		(0.054)		(0.054)		(0.052)		(0.059)	
Romania	-0.100	*	-0.104	*	-0.102	*	-0.226	***	-0.261	***
	(0.047)		(0.047)		(0.047)		(0.050)		(0.057)	
Austria	-0.502	***	-0.520	***	-0.511	***	-1.017	***	-1.024	***
	(0.058)		(0.059)		(0.058)		(0.061)		(0.065)	
Belgium	-0.489	***	-0.498	***	-0.493	***	-0.716	***	-0.689	***
	(0.057)		(0.057)		(0.057)		(0.057)		(0.065)	
Lithuania	0.070		0.046		0.064		0.055		0.055	
	(0.058)		(0.059)		(0.059)		(0.060)		(0.065)	
Poland	0.031		0.032		0.023		0.158	**	0.203	***
	(0.045)		(0.047)		(0.046)		(0.050)		(0.054)	
CzechRep	-0.490	***	-0.499	***	-0.492	***	-0.450	***	-0.392	***
	(0.056)		(0.056)		(0.056)		(0.063)		(0.068)	

Note: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%.

Table 2.B2 Regression coefficients for the transition to women's first births, control variables

	M1		M2		M3		M4		M5	
DurationSplines										
0-2	0.330	***	0.333	***	0.332	***	0.145	***	0.122	***
	(0.024)		(0.024)		(0.024)		(0.024)		(0.026)	
2-4	0.160	***	0.163	***	0.162	***	0.049	*	0.036	
	(0.019)		(0.019)		(0.019)		(0.019)		(0.021)	
4-6	0.066	***	0.069	***	0.067	***	0.008		-0.005	
	(0.020)		(0.020)		(0.020)		(0.020)		(0.022)	
6-10	-0.014		-0.012		-0.013		-0.034	**	-0.024	
	(0.012)		(0.012)		(0.012)		(0.013)		(0.014)	
10-15	-0.124	***	-0.123	***	-0.124	***	-0.111	***	-0.145	***
	(0.015)		(0.015)		(0.015)		(0.015)		(0.018)	
15+	-0.194	***	-0.194	***	-0.194	***	-0.201	***	-0.236	***
	(0.021)		(0.021)		(0.021)		(0.021)		(0.031)	
Constant	-2.631	***	-2.639	***	-2.625	***	-3.516	***	-3.465	***
	(0.070)		(0.065)		(0.071)		(0.073)		(0.081)	
Cohort (Ref. 1970 - 79)										
1960-69	0.065	**	0.066	**	0.065	**	0.167	***	0.248	***
	(0.023)		(0.023)		(0.023)		(0.025)		(0.028)	
1980-87	-0.526	***	-0.528	***	-0.527	***	-0.475	***	-0.516	***
	(0.034)		(0.034)		(0.034)		(0.036)		(0.042)	
Age at graduation	-0.048	***	-0.050	***	-0.047	***	-0.071	***	-0.070	***
	(0.008)		(0.006)		(0.008)		(0.008)		(0.008)	
Age at graduation2	-0.008	***	-0.008	***	-0.008	***	-0.006	***	-0.003	**
	(0.001)		(0.001)		(0.001)		(0.001)		(0.001)	
Father's education (Ref. Low)										
Medium	-0.019		-0.020		-0.019		-0.015		0.000	
	(0.030)		(0.030)		(0.030)		(0.032)		(0.035)	
High	-0.160	**	-0.164	**	-0.160	**	-0.105	*	-0.093	
	(0.053)		(0.053)		(0.053)		(0.054)		(0.055)	
Unknown	-0.052		-0.052		-0.052		-0.061		-0.062	
	(0.040)		(0.040)		(0.040)		(0.044)		(0.049)	
Mother's education (Ref. Low)										
Medium	-0.092	**	-0.092	**	-0.091	**	-0.107	***	-0.104	**
	(0.030)		(0.030)		(0.030)		(0.032)		(0.034)	
High	-0.236	***	-0.238	***	-0.235	***	-0.190	***	-0.172	**
	(0.055)		(0.055)		(0.055)		(0.054)		(0.056)	
Unknown	-0.007		-0.005		-0.006		-0.056		-0.046	
	(0.053)		(0.054)		(0.053)		(0.057)		(0.066)	
N siblings (Ref. None)										
1	0.175	***	0.175	***	0.175	***	0.119	**	0.106	*
	(0.041)		(0.041)		(0.041)		(0.042)		(0.044)	
2	0.294	***	0.295	***	0.294	***	0.230	***	0.211	***
	(0.043)		(0.043)		(0.043)		(0.044)		(0.047)	
3+	0.380	***	0.382	***	0.380	***	0.325	***	0.309	***
	(0.042)		(0.042)		(0.042)		(0.044)		(0.047)	
Country (Ref. Bulgaria)										
France	-0.736	***	-0.748	***	-0.742	***	-0.914	***	-0.983	***
	(0.043)		(0.043)		(0.043)		(0.042)		(0.049)	
Romania	-0.260	***	-0.259	***	-0.260	***	-0.378	***	-0.480	***
	(0.042)		(0.042)		(0.042)		(0.044)		(0.054)	
Austria	-0.717	***	-0.726	***	-0.724	***	-1.029	***	-1.140	***
	(0.042)		(0.042)		(0.043)		(0.044)		(0.051)	
Belgium	-0.648	***	-0.661	***	-0.656	***	-0.856	***	-0.857	***
	(0.045)		(0.045)		(0.046)		(0.047)		(0.053)	
Lithuania	-0.155	**	-0.160	**	-0.160	**	0.006		-0.014	
	(0.054)		(0.054)		(0.054)		(0.054)		(0.057)	
Poland	-0.066		-0.074		-0.073		0.099	*	0.047	
	(0.038)		(0.039)		(0.039)		(0.042)		(0.046)	
CzechRep	-0.368	***	-0.371	***	-0.370	***	-0.352	***	-0.380	***
	(0.045)		(0.045)		(0.045)		(0.050)		(0.056)	

Note: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%.

Table 2.B3 Regression coefficients for the transition to men's second births, control variables

	M1		M2		M3		M4		M5	
Duration Splines										
0-2	0.645	***	0.653	***	0.646	***	0.655	***	0.673	***
	(0.028)		(0.028)		(0.028)		(0.028)		(0.032)	
2-4	-0.180	***	-0.175	***	-0.179	***	-0.164	***	-0.160	***
	(0.028)		(0.028)		(0.028)		(0.028)		(0.031)	
4-6	-0.121	***	-0.119	***	-0.121	***	-0.113	**	-0.117	**
	(0.034)		(0.034)		(0.034)		(0.034)		(0.038)	
6-11	-0.188	***	-0.186	***	-0.188	***	-0.189	***	-0.199	***
	(0.022)		(0.022)		(0.022)		(0.022)		(0.024)	
11+	0.014		0.015		0.015		0.011		0.026	
	(0.052)		(0.052)		(0.052)		(0.052)		(0.057)	
Constant	-3.512	***	-3.507	***	-3.466	***	-5.075	***	-5.226	***
	(0.100)		(0.099)		(0.100)		(0.142)		(0.162)	
Cohort (Ref. 1970 - 79)										
1960-69	0.177	***	0.182	***	0.176	***	0.206	***	0.241	***
	(0.037)		(0.037)		(0.037)		(0.036)		(0.040)	
1980-87	-0.391	***	-0.395	***	-0.386	***	-0.423	***	-0.454	***
	(0.091)		(0.092)		(0.091)		(0.092)		(0.110)	
Age at first birth	-0.006		0.001		-0.005		-0.020	**	-0.007	
	(0.007)		(0.007)		(0.007)		(0.006)		(0.008)	
Age at first birth2	0.001	*	0.001		0.001	*	0.001		0.000	
	(0.001)		(0.001)		(0.001)		(0.001)		(0.001)	
Father's education (Ref. Low)										
Medium	-0.091		-0.086		-0.087		-0.072		-0.075	
	(0.046)		(0.047)		(0.046)		(0.047)		(0.051)	
High	-0.197	*	-0.173	*	-0.191	*	-0.179	*	-0.182	*
	(0.086)		(0.086)		(0.086)		(0.085)		(0.088)	
Unknown	-0.242	***	-0.242	***	-0.238	***	-0.220	***	-0.261	***
	(0.061)		(0.062)		(0.061)		(0.061)		(0.070)	
Mother's education (Ref. Low)										
Medium	-0.177	***	-0.175	***	-0.178	***	-0.142	**	-0.118	*
	(0.048)		(0.048)		(0.048)		(0.048)		(0.051)	
High	-0.267	**	-0.248	**	-0.264	**	-0.217	*	-0.171	
	(0.089)		(0.090)		(0.089)		(0.088)		(0.091)	
Unknown	-0.113		-0.120		-0.117		-0.068		-0.011	
	(0.077)		(0.078)		(0.077)		(0.078)		(0.091)	
N siblings (Ref. None)										
1	0.162	*	0.162	*	0.159	*	0.124		0.131	
	(0.063)		(0.064)		(0.064)		(0.064)		(0.068)	
2	0.369	***	0.373	***	0.365	***	0.308	***	0.284	***
	(0.067)		(0.068)		(0.067)		(0.067)		(0.072)	
3+	0.497	***	0.498	***	0.491	***	0.418	***	0.397	***
	(0.066)		(0.067)		(0.066)		(0.067)		(0.072)	
Country (Ref. Bulgaria)										
France	0.370	***	0.348	***	0.351	***	0.549	***	0.795	***
	(0.067)		(0.068)		(0.067)		(0.066)		(0.078)	
Romania	-0.356	***	-0.369	***	-0.366	***	-0.388	***	-0.276	***
	(0.065)		(0.066)		(0.066)		(0.066)		(0.078)	
Austria	0.171	*	0.121		0.127		0.215	**	0.461	***
	(0.076)		(0.077)		(0.077)		(0.078)		(0.085)	
Belgium	0.516	***	0.515	***	0.506	***	0.716	***	1.044	***
	(0.074)		(0.074)		(0.074)		(0.074)		(0.089)	
Lithuania	-0.062		-0.092		-0.091		-0.006		0.184	*
	(0.070)		(0.071)		(0.070)		(0.071)		(0.080)	
Poland	0.272	***	0.224	***	0.221	***	0.270	***	0.476	***
	(0.060)		(0.060)		(0.061)		(0.061)		(0.069)	
CzechRep	0.200	**	0.177	*	0.183	**	0.252	***	0.445	***
	(0.070)		(0.071)		(0.071)		(0.072)		(0.080)	

Table 2.B4 Regression coefficients for the transition to women's second births, control variables

	M1		M2		M3		M4		M5	
DurationSplines										
0-2	0.661	***	0.664	***	0.664	***	0.700	***	0.753	***
	(0.023)		(0.023)		(0.023)		(0.023)		(0.026)	
2-4	-0.229	***	-0.228	***	-0.228	***	-0.188	***	-0.191	***
	(0.023)		(0.022)		(0.023)		(0.023)		(0.025)	
4-6	-0.159	***	-0.158	***	-0.158	***	-0.136	***	-0.136	***
	(0.029)		(0.029)		(0.029)		(0.029)		(0.032)	
6-11	-0.196	***	-0.195	***	-0.196	***	-0.185	***	-0.174	***
	(0.018)		(0.018)		(0.018)		(0.018)		(0.021)	
11+	0.000		0.002		0.001		0.002		-0.036	
	(0.040)		(0.041)		(0.041)		(0.041)		(0.048)	
Constant	-3.398	***	-3.344	***	-3.381	***	-4.817	***	-5.138	***
	(0.074)		(0.074)		(0.075)		(0.094)		(0.112)	
Cohort (Ref. 1970 - 79)										
1960-69	0.115	***	0.113	***	0.117	***	0.144	***	0.212	***
	(0.028)		(0.028)		(0.028)		(0.029)		(0.032)	
1980-87	-0.350	***	-0.354	***	-0.351	***	-0.363	***	-0.380	***
	(0.056)		(0.056)		(0.056)		(0.058)		(0.070)	
Age at first birth	-0.029	***	-0.023	***	-0.027	***	-0.026	***	-0.025	***
	(0.005)		(0.004)		(0.005)		(0.005)		(0.006)	
Age at first birth2	0.001		0.001		0.001		0.001		-0.001	
	(0.001)		(0.001)		(0.001)		(0.001)		(0.001)	
Father's education (Ref. Low)										
Medium	-0.163	***	-0.159	***	-0.161	***	-0.150	***	-0.116	**
	(0.036)		(0.036)		(0.036)		(0.038)		(0.042)	
High	-0.072		-0.039		-0.069		-0.064		-0.051	
	(0.070)		(0.070)		(0.070)		(0.072)		(0.075)	
Unknown	-0.296	***	-0.302	***	-0.297	***	-0.249	***	-0.218	***
	(0.049)		(0.050)		(0.050)		(0.052)		(0.060)	
Mother's education (Ref. Low)										
Medium	-0.130	***	-0.119	**	-0.124	***	-0.133	***	-0.137	***
	(0.036)		(0.036)		(0.036)		(0.038)		(0.041)	
High	-0.212	**	-0.164	*	-0.202	**	-0.190	*	-0.193	*
	(0.074)		(0.074)		(0.075)		(0.075)		(0.078)	
Unknown	0.099		0.107		0.104		0.104		0.034	
	(0.064)		(0.064)		(0.064)		(0.067)		(0.079)	
N siblings (Ref. None)										
1	0.211	***	0.208	***	0.210	***	0.171	**	0.215	***
	(0.052)		(0.053)		(0.053)		(0.054)		(0.059)	
2	0.443	***	0.436	***	0.440	***	0.414	***	0.424	***
	(0.055)		(0.055)		(0.055)		(0.057)		(0.062)	
3+	0.536	***	0.528	***	0.532	***	0.513	***	0.530	***
	(0.055)		(0.055)		(0.055)		(0.057)		(0.063)	
Country (Ref. Bulgaria)										
France	0.351	***	0.354	***	0.343	***	0.540	***	0.789	***
	(0.052)		(0.052)		(0.052)		(0.053)		(0.063)	
Romania	-0.262	***	-0.258	***	-0.255	***	-0.271	***	-0.313	***
	(0.053)		(0.053)		(0.053)		(0.056)		(0.071)	
Austria	0.422	***	0.393	***	0.407	***	0.433	***	0.667	***
	(0.051)		(0.052)		(0.052)		(0.054)		(0.064)	
Belgium	0.351	***	0.346	***	0.333	***	0.522	***	0.853	***
	(0.059)		(0.060)		(0.060)		(0.063)		(0.074)	
Lithuania	-0.164	**	-0.197	**	-0.189	**	0.010		0.163	*
	(0.061)		(0.062)		(0.062)		(0.065)		(0.070)	
Poland	0.365	***	0.331	***	0.341	***	0.369	***	0.527	***
	(0.045)		(0.045)		(0.046)		(0.048)		(0.055)	
CzechRep	0.181	***	0.160	**	0.176	***	0.246	***	0.419	***
	(0.053)		(0.053)		(0.053)		(0.056)		(0.063)	

Table 2.B5 Regression coefficients for the transition to men's third births, control variables

	M1		M2		M3		M4		M5	
DurationSplines										
0-2	0.485	***	0.485	***	0.486	***	0.495	***	0.502	***
	(0.058)		(0.058)		(0.058)		(0.058)		(0.069)	
2-4	-0.271	***	-0.271	***	-0.271	***	-0.266	***	-0.245	***
	(0.055)		(0.055)		(0.055)		(0.055)		(0.065)	
4-6	-0.134	*	-0.134	*	-0.134	*	-0.128	*	-0.122	
	(0.064)		(0.064)		(0.064)		(0.064)		(0.073)	
6-11	-0.110	**	-0.109	**	-0.110	**	-0.106	**	-0.084	*
	(0.035)		(0.035)		(0.035)		(0.035)		(0.040)	
11+	-0.018		-0.019		-0.018		-0.019		-0.035	
	(0.077)		(0.077)		(0.077)		(0.077)		(0.088)	
Constant	-5.636	***	-5.474	***	-5.604	***	-6.447	***	-7.241	***
	(0.193)		(0.189)		(0.195)		(0.270)		(0.346)	
Cohort (Ref. 1970 - 79)										
1960-69	-0.044		-0.055		-0.044		-0.055		-0.021	
	(0.070)		(0.070)		(0.070)		(0.069)		(0.082)	
1980-87	-0.107		-0.106		-0.108		-0.147		-0.213	
	(0.209)		(0.209)		(0.209)		(0.206)		(0.260)	
Age at first birth	-0.003		0.001		-0.003		-0.008		0.015	
	(0.011)		(0.011)		(0.011)		(0.010)		(0.014)	
Age at first birth2	0.007	***	0.007	***	0.007	***	0.005	***	0.002	
	(0.001)		(0.001)		(0.001)		(0.001)		(0.001)	
Father's education (Ref. Low)										
Medium	-0.109		-0.117		-0.106		-0.091		-0.099	
	(0.083)		(0.083)		(0.083)		(0.083)		(0.093)	
High	0.025		0.034		0.027		0.048		0.051	
	(0.158)		(0.155)		(0.158)		(0.157)		(0.163)	
Unknown	-0.001		0.020		0.002		-0.028		-0.028	
	(0.105)		(0.105)		(0.105)		(0.106)		(0.134)	
Mother's education (Ref. Low)										
Medium	-0.099		-0.107		-0.099		-0.017		0.008	
	(0.086)		(0.086)		(0.086)		(0.086)		(0.096)	
High	-0.173		-0.159		-0.171		-0.092		-0.021	
	(0.181)		(0.183)		(0.182)		(0.183)		(0.187)	
Unknown	-0.154		-0.170		-0.158		-0.079		0.013	
	(0.131)		(0.131)		(0.132)		(0.132)		(0.162)	
N siblings (Ref. None)										
1	0.198		0.188		0.194		0.128		0.142	
	(0.134)		(0.134)		(0.134)		(0.135)		(0.147)	
2	0.560	***	0.557	***	0.557	***	0.494	***	0.527	***
	(0.136)		(0.136)		(0.136)		(0.136)		(0.149)	
3+	0.994	***	1.003	***	0.989	***	0.870	***	0.804	***
	(0.130)		(0.130)		(0.130)		(0.130)		(0.144)	
Country (Ref. Bulgaria)										
France	1.086	***	1.021	***	1.069	***	1.228	***	2.227	***
	(0.126)		(0.127)		(0.126)		(0.126)		(0.214)	
Romania	0.317	*	0.238		0.303	*	0.215		0.889	***
	(0.130)		(0.132)		(0.130)		(0.131)		(0.228)	
Austria	0.965	***	0.792	***	0.932	***	0.985	***	1.857	***
	(0.133)		(0.136)		(0.136)		(0.137)		(0.219)	
Belgium	0.850	***	0.827	***	0.838	***	0.979	***	2.028	***
	(0.131)		(0.131)		(0.131)		(0.132)		(0.225)	
Lithuania	0.333	*	0.184		0.305	*	0.424	**	1.164	***
	(0.142)		(0.144)		(0.143)		(0.145)		(0.226)	
Poland	0.982	***	0.792	***	0.943	***	0.979	***	1.910	***
	(0.115)		(0.116)		(0.118)		(0.118)		(0.204)	
CzechRep	0.589	***	0.487	***	0.572	***	0.627	***	1.475	***
	(0.140)		(0.142)		(0.141)		(0.143)		(0.226)	
SigmaEps	0.785	***	0.823	***	0.788	***	0.779	***	0.781	***
	(0.034)		(0.032)		(0.034)		(0.019)		(0.021)	

Table 2.B6 Regression coefficients for the transition to women's third births, control variables

	M1		M2		M3		M4		M5	
DurationSplines										
0-2	0.508	***	0.508	***	0.510	***	0.529	***	0.587	***
	(0.045)		(0.045)		(0.045)		(0.045)		(0.057)	
2-4	-0.327	***	-0.327	***	-0.327	***	-0.315	***	-0.351	***
	(0.043)		(0.043)		(0.043)		(0.043)		(0.054)	
4-6	-0.108	*	-0.109	*	-0.108	*	-0.098		-0.088	
	(0.051)		(0.051)		(0.051)		(0.051)		(0.063)	
6-11	-0.155	***	-0.155	***	-0.155	***	-0.151	***	-0.118	***
	(0.027)		(0.028)		(0.027)		(0.027)		(0.033)	
11+	0.031		0.030		0.030		0.030		-0.007	
	(0.059)		(0.059)		(0.059)		(0.059)		(0.071)	
Constant	-5.312	***	-5.185	***	-5.294	***	-6.087	***	-7.142	***
	(0.151)		(0.150)		(0.151)		(0.183)		(0.261)	
Cohort (Ref. 1970 - 79)										
1960-69	-0.079		-0.080		-0.076		-0.052		-0.019	
	(0.050)		(0.050)		(0.050)		(0.051)		(0.063)	
1980-87	-0.013		0.006		-0.017		-0.022		0.182	
	(0.123)		(0.122)		(0.123)		(0.125)		(0.168)	
Age at first birth	-0.009		-0.011		-0.006		-0.004		-0.007	
	(0.007)		(0.007)		(0.008)		(0.008)		(0.010)	
Age at first birth2	0.006	***	0.007	***	0.006	***	0.004	***	0.004	**
	(0.001)		(0.001)		(0.001)		(0.001)		(0.001)	
Father's education (Ref. Low)										
Medium	-0.054		-0.076		-0.053		0.011		0.029	
	(0.060)		(0.060)		(0.060)		(0.063)		(0.073)	
High	0.049		0.034		0.047		0.055		-0.002	
	(0.120)		(0.120)		(0.120)		(0.125)		(0.135)	
Unknown	-0.033		-0.040		-0.034		0.023		0.028	
	(0.081)		(0.081)		(0.081)		(0.084)		(0.105)	
Mother's education (Ref. Low)										
Medium	-0.121		-0.124	*	-0.115		-0.102		-0.160	*
	(0.062)		(0.062)		(0.063)		(0.065)		(0.073)	
High	0.002		0.024		0.013		0.009		-0.005	
	(0.136)		(0.136)		(0.136)		(0.141)		(0.148)	
Unknown	0.092		0.108		0.099		0.097		0.002	
	(0.098)		(0.098)		(0.098)		(0.102)		(0.131)	
N siblings (Ref. None)										
1	0.092		0.084		0.090		0.091		0.300	*
	(0.108)		(0.109)		(0.108)		(0.111)		(0.134)	
2	0.338	**	0.338	**	0.335	**	0.330	**	0.487	***
	(0.108)		(0.109)		(0.108)		(0.111)		(0.134)	
3+	0.644	***	0.658	***	0.638	***	0.627	***	0.749	***
	(0.106)		(0.106)		(0.106)		(0.108)		(0.132)	
Country (Ref. Bulgaria)										
France	1.278	***	1.292	***	1.271	***	1.427	***	2.177	***
	(0.097)		(0.097)		(0.097)		(0.100)		(0.171)	
Romania	0.303	**	0.321	**	0.305	**	0.343	**	0.764	***
	(0.104)		(0.105)		(0.104)		(0.107)		(0.188)	
Austria	1.015	***	0.973	***	1.001	***	1.057	***	1.912	***
	(0.096)		(0.097)		(0.096)		(0.099)		(0.168)	
Belgium	1.102	***	1.087	***	1.083	***	1.152	***	2.068	***
	(0.107)		(0.108)		(0.107)		(0.110)		(0.177)	
Lithuania	0.322	*	0.198		0.297	*	0.395	**	1.133	***
	(0.130)		(0.131)		(0.130)		(0.133)		(0.184)	
Poland	1.166	***	1.015	***	1.133	***	1.190	***	1.866	***
	(0.087)		(0.089)		(0.088)		(0.090)		(0.156)	
CzechRep	0.689	***	0.638	***	0.683	***	0.739	***	1.400	***
	(0.106)		(0.107)		(0.107)		(0.110)		(0.170)	
SigmaEps	0.646	***	0.663	***	0.655	***	0.748	***	0.737	***
	(0.026)		(0.024)		(0.026)		(0.016)		(0.018)	

Appendix 2.C: Full models: joint versus separate modeling

Table 2.C1 Regression coefficients for the transition to first birth, joint versus separate modeling

	Men						Women					
	Joint			Separate			Joint			Separate		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
0-2	0.178	(0.043)	***	0.154	(0.042)	***	0.145	(0.024)	***	0.077	(0.023)	***
2-4	0.193	(0.028)	***	0.145	(0.027)	***	0.049	(0.019)	*	-0.021	(0.018)	
4-6	0.069	(0.023)	**	0.010	(0.022)		0.008	(0.020)		-0.064	(0.019)	***
6-10	-0.030	(0.012)	*	-0.077	(0.011)	***	-0.034	(0.013)	**	-0.089	(0.012)	***
10-15	-0.105	(0.013)	***	-0.139	(0.012)	***	-0.111	(0.015)	***	-0.151	(0.015)	***
15+	-0.163	(0.016)	***	-0.173	(0.016)	***	-0.201	(0.021)	***	-0.209	(0.021)	***
Constant	-4.745	(0.100)	***	-4.462	(0.094)	***	-3.516	(0.073)	***	-3.216	(0.066)	***
Cohort (Ref. 1970 - 79)												
1960-69	0.343	(0.030)	***	0.265	(0.027)	***	0.167	(0.025)	***	0.111	(0.023)	***
1980-87	-0.515	(0.052)	***	-0.456	(0.047)	***	-0.475	(0.036)	***	-0.408	(0.032)	***
Age at graduation	-0.025	(0.008)	**	-0.042	(0.007)	***	-0.071	(0.008)	***	-0.073	(0.007)	***
Age at graduation2	-0.003	(0.001)	***	-0.002	(0.001)	*	-0.006	(0.001)	***	-0.003	(0.001)	***
Father's education (Ref. Low)												
Medium	-0.024	(0.038)		-0.030	(0.035)		-0.015	(0.032)		-0.007	(0.029)	
High	-0.241	(0.067)	***	-0.211	(0.060)	***	-0.105	(0.054)	*	-0.073	(0.047)	
Unknown	-0.086	(0.051)		-0.097	(0.048)	*	-0.061	(0.044)		-0.070	(0.039)	
Mother's education (Ref. Low)												
Medium	-0.085	(0.039)	*	-0.061	(0.036)		-0.107	(0.032)	***	-0.090	(0.029)	**
High	-0.115	(0.067)		-0.087	(0.061)		-0.190	(0.054)	***	-0.138	(0.048)	**
Unknown	-0.075	(0.065)		-0.052	(0.058)		-0.056	(0.057)		-0.059	(0.050)	
N siblings (Ref. None)												
1	0.105	(0.049)	*	0.084	(0.045)		0.119	(0.042)	**	0.092	(0.037)	*
2	0.290	(0.052)	***	0.245	(0.047)	***	0.230	(0.044)	***	0.179	(0.039)	***
3+	0.334	(0.052)	***	0.281	(0.047)	***	0.325	(0.044)	***	0.254	(0.038)	***
Country (Ref. Bulgaria)												
France	-0.846	(0.052)	***	-0.598	(0.047)	***	-0.914	(0.042)	***	-0.665	(0.038)	***
Romania	-0.226	(0.050)	***	-0.152	(0.048)	**	-0.378	(0.044)	***	-0.300	(0.041)	***
Austria	-1.017	(0.061)	***	-0.797	(0.055)	***	-1.029	(0.044)	***	-0.790	(0.039)	***
Belgium	-0.716	(0.057)	***	-0.508	(0.052)	***	-0.856	(0.047)	***	-0.628	(0.042)	***
Lithuania	0.055	(0.060)		0.059	(0.057)		0.006	(0.054)		0.020	(0.050)	
Poland	0.158	(0.050)	**	0.136	(0.048)	**	0.099	(0.042)	*	0.066	(0.039)	
CzechRep	-0.450	(0.063)	***	-0.423	(0.057)	***	-0.352	(0.050)	***	-0.321	(0.045)	***
Education (Ref. Medium)												
Low	-0.260	(0.063)	***	-0.237	(0.058)	***	0.070	(0.049)		0.030	(0.044)	
High	-0.051	(0.057)		0.009	(0.051)		-0.188	(0.044)	***	-0.089	(0.039)	*
Earning potential	-0.072	(0.033)	*	-0.045	(0.030)		-0.016	(0.021)		0.003	(0.019)	
In union (Ref. Not in union)												
Low	3.390	(0.050)	***	2.977	(0.047)	***	2.481	(0.044)	***	2.143	(0.042)	***
Medium	3.097	(0.034)	***	2.769	(0.033)	***	2.407	(0.027)	***	2.102	(0.026)	***
High	2.968	(0.045)	***	2.713	(0.042)	***	2.440	(0.040)	***	2.169	(0.036)	***
Missing	1.391	(0.072)	***	1.247	(0.066)	***	1.749	(0.049)	***	1.541	(0.044)	***
ln-L				-49556						-67724		

Note: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%.

Table 2.C2 Regression coefficients for the transition to second birth, joint versus separate modeling

	Men						Women					
	Joint			Separate			Joint			Separate		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
0-2	0.655	(0.028)	***	0.541	(0.027)	***	0.700	(0.023)	***	0.585	(0.022)	***
2-4	-0.164	(0.028)	***	-0.246	(0.027)	***	-0.188	(0.023)	***	-0.272	(0.022)	***
4-6	-0.113	(0.034)	**	-0.152	(0.034)	***	-0.136	(0.029)	***	-0.178	(0.028)	***
6-11	-0.189	(0.022)	***	-0.209	(0.022)	***	-0.185	(0.018)	***	-0.205	(0.018)	***
11+	0.011	(0.052)		-0.001	(0.052)		0.002	(0.041)		-0.009	(0.041)	
Constant	-5.075	(0.142)	***	-4.128	(0.121)	***	-4.817	(0.094)	***	-4.145	(0.081)	***
Cohort (Ref. 1970 - 79)												
1960-69	0.206	(0.036)	***	0.097	(0.030)	**	0.144	(0.029)	***	0.078	(0.024)	**
1980-87	-0.423	(0.092)	***	-0.272	(0.078)	***	-0.363	(0.058)	***	-0.229	(0.050)	***
Age at first birth	-0.020	(0.006)	**	-0.052	(0.005)	***	-0.026	(0.005)	***	-0.069	(0.003)	***
Age at first birth2	0.001	(0.001)		0.002	(0.001)	**	0.001	(0.001)		0.002	(0.000)	***
Father's education (Ref. Low)												
Medium	-0.072	(0.047)		-0.051	(0.039)		-0.150	(0.038)	***	-0.120	(0.031)	***
High	-0.179	(0.085)	*	-0.107	(0.071)		-0.064	(0.072)		-0.035	(0.060)	
Unknown	-0.220	(0.061)	***	-0.160	(0.050)	**	-0.249	(0.052)	***	-0.196	(0.043)	***
Mother's education (Ref. Low)												
Medium	-0.142	(0.048)	**	-0.103	(0.040)	**	-0.133	(0.038)	***	-0.072	(0.031)	*
High	-0.217	(0.088)	*	-0.141	(0.075)		-0.190	(0.075)	*	-0.109	(0.064)	
Unknown	-0.068	(0.078)		-0.061	(0.064)		0.104	(0.067)		0.067	(0.055)	
N siblings (Ref. None)												
1	0.124	(0.064)		0.094	(0.054)		0.171	(0.054)	**	0.135	(0.046)	**
2	0.308	(0.067)	***	0.209	(0.056)	***	0.414	(0.057)	***	0.314	(0.048)	***
3+	0.418	(0.067)	***	0.308	(0.055)	***	0.513	(0.057)	***	0.370	(0.048)	***
Country (Ref. Bulgaria)												
France	0.549	(0.066)	***	0.547	(0.055)	***	0.540	(0.053)	***	0.615	(0.045)	***
Romania	-0.388	(0.066)	***	-0.285	(0.054)	***	-0.271	(0.056)	***	-0.171	(0.047)	***
Austria	0.215	(0.078)	**	0.270	(0.064)	***	0.433	(0.054)	***	0.517	(0.045)	***
Belgium	0.716	(0.074)	***	0.635	(0.061)	***	0.522	(0.063)	***	0.556	(0.053)	***
Lithuania	-0.006	(0.071)		0.017	(0.059)		0.010	(0.065)		0.092	(0.054)	
Poland	0.270	(0.061)	***	0.239	(0.050)	***	0.369	(0.048)	***	0.358	(0.040)	***
CzechRep	0.252	(0.072)	***	0.311	(0.059)	***	0.246	(0.056)	***	0.289	(0.046)	***
Education (Ref. Medium)												
Low	-0.029	(0.071)		-0.042	(0.059)		0.126	(0.050)	*	-0.026	(0.041)	
High	0.113	(0.058)	*	0.217	(0.048)	***	0.049	(0.048)		0.239	(0.040)	***
Earning potential	-0.149	(0.043)	***	-0.118	(0.036)	***	-0.111	(0.025)	***	-0.075	(0.021)	***
In union (Ref. Not in union)												
Low	1.960	(0.110)	***	1.482	(0.096)	***	1.493	(0.064)	***	1.127	(0.056)	***
Medium	1.668	(0.104)	***	1.303	(0.092)	***	1.418	(0.056)	***	1.098	(0.049)	***
High	1.696	(0.111)	***	1.338	(0.098)	***	1.537	(0.067)	***	1.208	(0.058)	***
Missing	0.610	(0.139)	***	0.604	(0.126)	***	0.694	(0.079)	***	0.541	(0.071)	***
ln-L				-29441						-43386		

Note: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%.

Table 2.C3 Regression coefficients for the transition to third birth, joint versus separate modeling

	Men						Women					
	Joint			Separate			Joint			Separate		
	Coef.	se		Coef.	se		Coef.	se		Coef.	se	
0-2	0.495	(0.058)	***	0.446	(0.058)	***	0.529	(0.045)	***	0.479	(0.045)	***
2-4	-0.266	(0.055)	***	-0.298	(0.055)	***	-0.315	(0.043)	***	-0.349	(0.043)	***
4-6	-0.128	(0.064)	*	-0.141	(0.064)	*	-0.098	(0.051)		-0.115	(0.051)	*
6-11	-0.106	(0.035)	**	-0.110	(0.035)	**	-0.151	(0.027)	***	-0.158	(0.028)	***
11+	-0.019	(0.077)		-0.014	(0.077)		0.030	(0.059)		0.032	(0.059)	
Constant	-6.447	(0.270)	***	-5.236	(0.251)	***	-6.087	(0.183)	***	-5.230	(0.168)	***
Cohort												
(Ref. 1970 - 79)												
1960-69	-0.055	(0.069)		-0.158	(0.064)	*	-0.052	(0.051)		-0.098	(0.047)	*
1980-87	-0.147	(0.206)		0.054	(0.194)		-0.022	(0.125)		0.157	(0.116)	
Age at first birth	-0.008	(0.010)		-0.038	(0.009)	***	-0.004	(0.008)		-0.042	(0.007)	***
Age at first birth2	0.005	(0.001)	***	0.006	(0.001)	***	0.004	(0.001)	***	0.006	(0.001)	***
Father's education												
(Ref. Low)												
Medium	-0.091	(0.083)		-0.058	(0.076)		0.011	(0.063)		0.016	(0.057)	
High	0.048	(0.157)		0.123	(0.146)		0.055	(0.125)		0.114	(0.113)	
Unknown	-0.028	(0.106)		0.015	(0.098)		0.023	(0.084)		0.036	(0.076)	
Mother's education												
(Ref. Low)												
Medium	-0.017	(0.086)		0.006	(0.080)		-0.102	(0.065)		-0.047	(0.059)	
High	-0.092	(0.183)		-0.078	(0.171)		0.009	(0.141)		0.057	(0.128)	
Unknown	-0.079	(0.132)		-0.090	(0.122)		0.097	(0.102)		0.093	(0.091)	
N siblings (Ref. None)												
1	0.128	(0.135)		0.107	(0.126)		0.091	(0.111)		0.032	(0.103)	
2	0.494	(0.136)	***	0.360	(0.126)	**	0.330	(0.111)	**	0.209	(0.102)	*
3+	0.870	(0.130)	***	0.691	(0.121)	***	0.627	(0.108)	***	0.443	(0.100)	***
Country (Ref. Bulgaria)												
France	1.228	(0.126)	***	1.048	(0.118)	***	1.427	(0.100)	***	1.355	(0.092)	***
Romania	0.215	(0.131)		0.297	(0.121)	*	0.343	(0.107)	**	0.467	(0.099)	***
Austria	0.985	(0.137)	***	0.931	(0.127)	***	1.057	(0.099)	***	1.068	(0.091)	***
Belgium	0.979	(0.132)	***	0.828	(0.122)	***	1.152	(0.110)	***	1.129	(0.101)	***
Lithuania	0.424	(0.145)	**	0.453	(0.135)	***	0.395	(0.133)	**	0.517	(0.124)	***
Poland	0.979	(0.118)	***	0.897	(0.110)	***	1.190	(0.090)	***	1.153	(0.084)	***
CzechRep	0.627	(0.143)	***	0.646	(0.134)	***	0.739	(0.110)	***	0.775	(0.102)	***
Education (Ref. Medium)												
Low	0.274	(0.130)	*	0.232	(0.118)	*	0.464	(0.081)	***	0.322	(0.075)	***
High	0.185	(0.109)		0.297	(0.100)	**	-0.011	(0.089)		0.161	(0.082)	
Earning potential	-0.107	(0.090)		-0.064	(0.082)		-0.128	(0.047)	**	-0.079	(0.045)	
In union												
(Ref. Not in union)												
Low	1.512	(0.202)	***	1.031	(0.190)	***	1.124	(0.109)	***	0.763	(0.100)	***
Medium	0.841	(0.198)	***	0.500	(0.186)	**	0.560	(0.100)	***	0.311	(0.092)	***
High	0.847	(0.215)	***	0.483	(0.202)	*	0.799	(0.119)	***	0.525	(0.110)	***
Missing	0.494	(0.264)		0.521	(0.251)	*	0.289	(0.146)	*	0.258	(0.136)	
SigmaEps	0.779	(0.019)	***				0.748	(0.016)	***			
ln-L	-87787			-9276			-125571			-15040		

Note: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%.

PART II. Couple-level analysis

Chapter 3. Educational assortative mating and couples' fertility

Abstract

Assuming that partners mate assortatively, scholars usually have approached fertility from a woman's perspective. However, omitting partners' characteristics may lead to biased results. The effect of women's education on fertility may also embed the effect of the partner's education. This study aims to extend the literature about the effect of partners' educational characteristics on fertility, i.e., the level of education and the field of study. The analytical strategy comes in two steps. First, we estimate the earning potential by field of study, country, and sex with European Labor Force Surveys. Second, we link the results of these estimations with the Generation and Gender Surveys of eight European countries, and we model couples' transition to first and higher order parities jointly, accounting for couples' unobserved characteristics. The findings suggest that both men and women face opportunity costs of fertility with an increasing earning potential in terms of both higher educational level and more profitable field of study. Next, we found that traditional pairings, characterized by an imbalance of education and earning potential in favor of the man, are more conducive to fertility compared to non-traditional pairings, i.e., where the woman is more educated than the man. However, it also emerges that a highly educated woman is more likely to go beyond the first child if she partnered with a highly educated man.

Keywords: assortative mating, education, fertility, joint modeling

Introduction

Fertility studies have typically investigated characteristics of one parent, usually the mother. To justify this approach, scholars have pointed to the fact that people tend to mate assortatively, i.e., partners share similar characteristics, values, and lifestyles (Corijn et al. 1996). Since the majority of births occur within unions, failing to control for the partner's characteristics leads to an omitted variable bias: the results based on the individual may reflect the effect of the partner (Gustafsson and Worku 2006). The omitted variable bias is bigger insofar as the role of partners' characteristics differs. Paradoxically, assortative mating is both a justification and a criticism to focus on only one partner when studying fertility.

In particular, educational assortative mating has been widely documented (Blossfeld and Timm 2003), and omitting the partner has important consequences when studying the relationship between education and fertility. Kreyenfeld (2002) suggested that a positive association between education and fertility for women could reflect the fact that highly educated women mostly mate with highly educated men. In fact, micro-economic theories of the family predict a positive association between education and fertility for men due to income effects, whereas they predict a negative association for women due to opportunity costs (Becker 1991). Because of these gender differences in the effect of education on fertility, the focus on only one partner muddles the interpretation of results: it becomes unclear whether his or her education matters (Trimarchi and Van Bavel 2015).

Given that patterns of educational assortative mating are changing, it is interesting to look at couples' behaviors instead of individual behavior (Van Bavel 2012). Even if educational homogamy remains strong, traditionally, hypergamy was prevailing: if there was a difference in educational attainment, the husband tended to have more education than his wife. However, in more recent cohorts, hypogamy has become more common than hypergamy: more often the woman has more education than the man (Esteve et al. 2012; Grow and Van Bavel 2015). The changes in patterns of educational assortative mating are linked to increasing female participation in higher education. Since the 1990s, the number of highly educated women reaching reproductive ages exceeds the number of highly educated men (DiPrete and Buchmann 2006).

While gender inequalities in higher education are disappearing, the gender segregation with regard to the field of study has remained stable over time (Charles and Bradley 2009). The gender segregation of fields of study reflects inequalities on the labor market, including

ensuing differences concerning the earning potential of men and women given the same level of education (Van de Werfhorst 2001; Blau and Khan 2016). Since educational expansion, medium and highly educated people are more heterogeneous groups, and the field of study has been considered a good distinctive trait for labor market outcomes and cultural resources (Van de Werfhorst 2001; Reimer, Noelke and Kucel 2008). In the last decade, field of study has been considered a relevant determinant of fertility timing and quantum: it helps in differentiating fertility behavior for those with an education higher than the upper-secondary level (Hoem et al. 2006a; Hoem et al. 2006b; Martín-García 2009; Bagavos 2010; Van Bavel 2010; Tesching 2012; Begall and Mills 2013).

The strand of research that focuses on the role of partners' relative socioeconomic resources for fertility mainly paid attention to the level of education, employment, and income of partners (Corijn et al. 1996; Kreyenfeld 2002; Gustafsson and Worku 2006; Dribe and Stanfors 2010; Begall 2013; Jalovaara and Miettinen 2013; Vignoli et al. 2012; Nitsche et al. 2015). The use of employment, occupation, and income as independent variables is especially problematic when studying fertility because of their endogenous nature, which could bias the results. In contrast, the main field of study, which characterizes the highest level of education attained, tends to be fixed over the life course. Still, the role of the field of study for both partners has not been explored. In this study, we contribute to this strand of research by proposing a way to estimate the earning potential for each partner without incurring in endogeneity issues that are typical when using current earnings (Xie et al. 2003).

We used the European Labor Force Surveys (EU-LFS) and OLS regressions to estimate earning potential by field of study. Next, we linked the results of these estimations with the Generations and Gender Surveys (GGS) of eight European countries given the information on the level of education, field of study, sex and country of residence. By means of a simultaneous equations approach, we estimated the effect of pairing by educational level, earning potential, and type of field on first, second, and third birth rates. The joint model of all birth parities allows us to account for the selection into parenthood, i.e., we account for those unobserved characteristics of the couple that affect their fertility, such as fecundity or characteristics of the family of origin. Previous studies, in contrast, focused on either first birth only or higher order births without accounting for selection effects (Dribe and Stanfors 2010; Jalovaara and Miettinen 2013; Nitsche et al. 2015).

Overall, the findings suggest that both men and women face opportunity costs of fertility with an increasing earning potential in terms of both higher educational level and more

profitable field of study. We found that traditional pairings, characterized by an imbalance of education and earning potential in favor of the man, are more conducive to fertility compared to non-traditional pairings, i.e., where the woman is more educated than the man. However, it emerges that a highly educated woman is more likely to go beyond the first child if she partnered with a highly educated man.

Fertility from a couple's perspective: the role of education

An influential strand of research in couple's fertility looks at the interaction between partners' desires, intentions, and preferences to determine who dominates in fertility decision-making (Thomson 1990; Thomson, McDonald and Bumpass 1990, Thomson 1997; Bauer and Kneip 2013). These studies aim to generate a framework of decision-making rules for fertility outcomes. For instance, the "sphere of interest rule" predicts that a woman's influence is stronger because the birth of a child is seen as a woman's matter. The "power rule", instead, predicts that the partner with more economic resources prevails in case of divergence. The majority of those studies concluded that it is important to also consider a man's preferences; however, studies for older cohorts (1940-1960) found that women had a stronger influence (Stein et al. 2014). Studies focusing on much younger cohorts found that both partners equally influenced the decision: both were able to impose a veto, eventually leading to childlessness (see the review of Stein et al. 2014). In this framework, education, if considered at all, is often seen as a means to bargaining power: those with more education have more power to impose their preferences (Lundberg and Pollack 1996; Testa et al. 2014).

Another strand focuses on the effect of partners' relative socioeconomic resources on the actual fertility behavior without considering partners' preferences, intentions, and desires. The aim is to examine how the effect of individual's characteristics is altered once accounting for the other partner's characteristics (Blossfeld and Huinik 1991; Kreyenfeld 2002; Köppen 2006; Gerster et al. 2007; Vignoli et al. 2012; Bartus et al. 2012; Begall 2013; Jalovaara and Miettinen 2013; Klesment et al. 2014). When feasible, the interaction between partners' characteristics is also considered, that is, the partnership context becomes the main unit of interest (Corijn et al. 1996; Gustafsson and Worku 2006; Naz, Nilsen and Vagstad 2006; Bauer and Jacob 2009; Dribe and Stanfors 2010; Nitsche et al. 2015). In this latter case, the focus shifts from the individual to the couple itself, aiming to explore the pairings that are more prone to childbearing. Within this strand of research, education, broadly speaking, is

one of the most important determinants since it affects individual economic potential and also individuals' tastes, preferences, and lifestyles (Van de Werfhorst 2001; Blossfeld 2009).

In this study, we consider enrollment in education as a control variable, and we focus on two dimensions of educational attainment: level of education and field of study. These two dimensions can be seen as expressions of an individual's earning potential. According to the Human Capital Theory, a higher level of education leads—after some time—to higher income (Becker 1964). Next, given the educational expansion, the focus on the field of study is justified by the fact that it represents a more distinctive trait of an individual educational trajectory (Cooney and Uhlenberg 1989). Given the level of education, the field of study has become an important predictor of the earning potential due to its close connection with future occupation (Ohlsson-Wijk 2015a). The persistent gender segregation in the field of study reflects the gender segregation in the labor market, which has profound consequences for income inequalities between sexes (DiPrete and Buchannan 2006; Blau and Khan 2016). Beyond the tight connection with earning potential, both the level of education and the field of study indicate a cultural endowment manifested in preferences, tastes, and attitudes, which, in turn, may affect childbearing behavior (Lesthaeghe and Surkyn 1998; Hakim 2003; Sobotka 2008; Van Bavel 2010). In the next section, we highlight the mechanisms that link education and couples' fertility and discuss both economic and cultural aspects.

Educational assortative mating and fertility

The specialization family model versus the pooling of resources

Parsons (1949) argued that sex-role segregation is functional to family stability and the overall well-being of society. In times when women's participation in the labor market was still scarce, the author claimed that the division of labor between husbands (i.e., the breadwinners) and wives (i.e., the homemakers) was fundamental to increase marital solidarity. In line with Parsons, an extension of micro-economic theory to family behavior, the New Home Economics, assumes that members of a family allocate efficiently and rationally their resources between household chores and labor market jobs (Becker 1991). Partners tend to specialize for efficiency reasons: the specialization strategy increases the interdependency between the partners, and it contributes to the value of the marriage.

Within the New Home Economics framework men and women have different comparative advantages in household and market activities. Marriage may be seen as a contract between sexes: women trade their "expertise" in household activities, whereas men trade their income and market activities. According to Becker (1991), positive assortative

mating in non-market traits (e.g., similar intelligence, similar attractiveness) maximizes the utility of marriage in combination with negative assortative mating in earning potential, i.e., different income. For instance, if both partners are intelligent (positive assortative mating in nonmarket traits) and the man has a higher earning potential than the woman (negative assortative mating in market traits), partners maximize the gains from marriage. However, with increasing women's human capital and participation in the labor market, Becker himself acknowledged that the division of labor may be detached from sex roles: "husbands would be more specialized in household work and wives to market activities in half marriages and the reverse would occur in the other half" (Becker 1991:78).

As a result of Becker's specialization model, it is possible to distinguish between two types of mechanisms that drive the relationship between *market traits*, e.g., earning potential, and fertility: the income effect and the price effect. The price effect is typical for those partners that specialize in household activities, traditionally the women, since a higher income means greater opportunity costs, i.e., the time spent in unpaid work substitutes the time spent in the market. The income effect characterizes the relationship between earning potential and fertility for partners who specialize in labor market activities, typically men, since a higher income will allow them to afford more children. Traditionally, a pairing would be conducive to fertility if the woman has a lower earning potential than her partner. Given the societal changes that occurred in the early 1970s, a *specialization* model is not necessarily established on traditional gender roles: the overall imbalance in earning potential between partners can be conducive to childbearing.

Specialization, however, may not be the most efficient family model. The specialization of partners in paid and unpaid work can be troublesome, especially in times of crisis, divorce, or death of the partner (Oppenheimer 1988; 1994). After the Second World War, the desire to achieve and maintain a higher standard of living increased, and families with exclusively stay-at-home women were penalized (Blossfeld and Drobnič 2001). Oppenheimer (1994) suggested that given the structural changes in a globalized world, the *pooling of resources* between partners is a more efficient family model compared to specialization. Women's employment may be an adaptive strategy that permits to diversify the family resources and to raise the economic living standards. If partners are interchangeable in their roles, they can adapt more quickly and efficiently to the needs of the family. Oppenheimer (1988) argues that the gains from marriage would derive from the possibilities to increase the standards of living by marrying a partner with higher earning potential than herself or himself. However, the

consequences for fertility in a dual-earner society are not straightforward. First, a high level of earning potential at couples' disposal helps when facing the costs of children. Nevertheless, the costs of children are not fixed for every couple since people desire that their own children have a similar or higher standard of living than themselves (Oppenheimer 1994; Hobcraft and Kiernan 1995). As a consequence, higher earning potential also means higher costs of children.

Independently of who is the partner with the highest earning potential, a higher level of earning potential may be functional to meet a two-child family ideal. The ideal number of children that couples would like to have, especially in low-fertility contexts, is an increasingly studied topic of research. Sobotka and Beaujouan (2014) showed that a two-child family ideal is persistent across time and contexts, while findings have been unclear on the role of education and gender differences in shaping fertility intentions (Puur et al. 2008; Beaujouan et al. 2013; Testa 2014). The underlying assumption is that the two-child ideal is not dependent on the level of education or field of study, but, as we will see in the next section, this may not be the case.

The cultural endowment of education

As already mentioned, the cultural endowment of education may also affect fertility, either positively or negatively. The proponents of the Second Demographic Transition (SDT) stress that a high level of education is associated with post-materialist values, i.e., self-fulfillment and autonomy. In particular, more highly educated individuals would hold more liberal and anti-conformist behaviors and would be more inclined to non-traditional family forms (Lesthaeghe and Surkyn 1998), which would result in lower fertility rates. The intensive student role, with ensuing postponement of family formation, could lead to a loss of interest in forming a family due to other priorities, such as having a good career, that are generated while being in education (Rindfuss et al. 1988).

While the scholars of SDT did not keep a gender perspective, Bernhardt (2004:26) suggested that values such as autonomy and self-actualization gained more emphasis in women's lives rather than men's lives, since for the former being economically independent was a new achievement, whereas for the latter, it was the norm. According to Bernhardt (2004), the central concepts of the SDT are not *gender neutral*, but rather they have different meanings for men and women. This is also linked to the fact that the changes in women's and men's lives with regard to the balance between public (institutions) and private sphere (family) did not occur synchronically (England 2010; Goldscheider et al. 2015). In the first

phase, women's lives were changed from being a homemaker to participating in tertiary education and working full time. The fact that during this phase men and women were unequally sharing domestic and economic tasks has contributed to what the SDT made its features: cohabitation and divorce. In the second phase, instead, men's lives change by accepting to be more involved in the private sphere. An equal share of domestic tasks as well as economic responsibilities would be conducive to fertility (Esping-Andersen and Billari 2015; Goldscheider et al. 2015). Still, when that gender equity will be achieved depends on men's attitudes towards the family, i.e., the partnership, childbearing, and childrearing (Goldscheider 2012).

A higher level of education is associated with gender egalitarian attitudes, especially concerning men's behavior within the household (Kravdal and Rindfuss 2008; Esping-Andersern 2009; Sullivan et al. 2014). An equal share of domestic and economic responsibilities would help in reducing the opportunity costs of childbearing, which otherwise would be concentrated only on one of the partners (Torr and Short 2004; Kravdal and Rindfuss 2008; Goldscheider et al. 2013).

The choice of the field of study, like the level of education, may also reflect attitudes and preferences that affect fertility behavior. The gender composition of the field of study may be the result of pre-determined choices about parenthood. Perhaps women (but also men) may choose their field of study according to their attitudes about traditional gender roles (Van Bavel 2010). Men who choose a typically male-dominated field and women who self-select themselves in female-represented fields may have gender-stereotypical norms about the role of mother and father. On top of the self-selection, the field of study may affect attitudes about gender roles via a socialization process during enrollment and future occupation (Ohlsson-Wijk 2015a). For instance, women enrolled in health studies or in teaching may be inclined to socialize about more typical feminine roles, such as caregivers (Hoem et al. 2006a; Begall and Mills 2013; Ohlsson-Wijk 2015a). Similarly, men enrolled in service studies (e.g., security, environmental protection) may socialize about more typically masculine roles, such as breadwinners.

In a partnership context, the fields of study of the partners relate to each other. We could define a "stereotypical couple" as one constituted of a man who graduated in a male-dominated field and a woman who graduated in a female-dominated field. This definition reflects the argument that socialization about parenting roles with people of their own sex enhances traditional gender roles and expectations about fathering and mothering (i.e., being

the breadwinner and the caregiver, respectively). Within a stereotypical couple, traditional gender identities may not be questioned, even if the earning potential of the partners is similar or even imbalanced in favor of the woman.

Previous empirical findings

Previous findings related to different countries showed that if both partners are highly educated, the transition rate to the second and third birth is higher compared to couples where both partners have a medium level of education (Dribe and Stanfors 2010; Nitsche et al. 2015). For the first birth, studies on the Netherlands and Finland showed that models-fit improved when male's partner characteristics were included; however, woman's characteristics were more relevant to predict first birth rates. Moreover, these studies on first births did not find an effect of the educational pairing, i.e., the interaction between his and her education (Begall 2013; Jaloovara and Mittienen 2013). Focusing on Flemish and Dutch couples formed in the 1980s, Corijn et al. (1996) showed that couples with a highly educated woman tended to postpone parenthood compared to less educated homogamous couples. In line with this finding, Nitsche et al. (2015) found that in Belgium, Denmark, Finland, France, Luxembourg, the Netherlands, and the UK, homogamous highly educated couples were more likely to postpone the first birth compared to other pairings. In Italy, a more traditional context was found with regard to gender roles: Vignoli et al. (2012) found that men's income potential was more important than women's in predicting a first birth. The authors, however, noted that having a permanent type of contract increased the likelihood of first birth for both women and men.

Concerning the field of study, several studies showed that women graduated in a typical female-dominated field of study have a higher rate of first birth compared to their counterparts who graduated in fields with lower presence of women (Lappegård and Rønsen 2005; Martín-García and Baizan 2006; Van Bavel 2010; Tesching 2012; Begall and Mill 2013; Michelmore and Musick 2013), while mixed results have been found for higher order births and completed fertility (Hoem et la. 2006a; 2006b; Tesching 2012). Martín-García (2009) and Lappegård et al. (2011) showed that female-dominated fields were not conducive to childbearing for men in Spain and Norway, respectively. Overall, the interpretation of results pointed towards the fact that female-dominated fields are typically less profitable in terms of earnings, they tend to have a lower risk of skill depreciation but good compatibility between work and family.

Among those studies, only Van Bavel (2010) distinguished the effects of two important characteristics of the field of study, controlling for the gender composition: earning profile and attitude towards gender roles. The author found that women who graduated in disciplines with higher earning profile tend to have a higher likelihood to postpone motherhood. Some typically female-dominated fields, e.g., health and welfare, were among those fields with a high earning profile. Moreover, women graduated in disciplines where attitudes towards gender roles were more progressive also tended to postpone motherhood. The fields of study with a higher inclination towards traditional gender-role attitudes, however, were not necessarily concentrated among the female-dominated fields, since variations across educational levels and across countries were found.

Research hypotheses

Based on the theoretical arguments and previous findings, we formulate four hypotheses. *Hypothesis 1* builds on the general argument that specialization within the household is an efficient family model, and as such it is conducive to childbearing. The basic assumption is that an imbalance of earning potential between partners leads towards a division of labor: the partner with higher earning potential specializes in paid labor market activities, whereas the partner with lower earning potential specializes in unpaid work. Focusing on two dimensions—level of education and earning potential by field of study—we expect that couples where one of the partners is more educated than the other will have higher birth rates than homogamous couples, i.e., partners have the same level of education. Similarly, we expect that couples where one partner graduated in a field of study with a higher earning potential than the field of study of his/her partner will have higher birth rates than couples where both partners have the same earning potential.

Hypothesis 2 is a more specific version of the previous one, and it based on the Beckerian argument, according to which an imbalance of earning potential in favor of the man leads to a division of labor based on sex-roles; in turn, this division of labor may be conducive to childbearing. To find evidence for this hypothesis, we should observe that hypergamous couples (i.e., where the man is more educated than the woman) have higher birth rates than couples where the woman is more educated than the man or in homogamous couples. Accordingly, we expect that couples where the man has a higher earning potential than the woman will have higher birth rates compared to couples where both partners have a similar earning potential or couples where the woman earns more than the man.

Hypothesis 3, in contrast, is based on the pooling of resources argument, according to which a higher combined earning potential may lead to higher birth rates since those with higher earning potential may more easily afford the costs of children. Overall, we expect that couples where both partners are highly educated have higher fertility rates than other pairings. We also expect that a higher earning potential of the partners, given their field of study, enhances fertility.

Finally, given that a socialization processes with people of their own sex may enhance stereotypical attitudes towards gender roles as long as traditional gender roles are conducive to childbearing, we expect that gender-stereotypical couples have higher fertility compared to other pairings, after accounting for level of education, and earning potential (*hypothesis 4*).

Data and methods

Sample selection and dependent variables

We used Generation and Gender Surveys (GGS) of eight European countries, which collected information on the field of study, and we focused on respondents born between 1960-1987. The countries included are Austria, Belgium, Bulgaria, Czech Republic, France, Lithuania, Poland, and Romania. In order to have information about both partners' characteristics, we had to select only those who were in a co-residential union at the time of interview; from an initial sample of 44690 respondents, we dropped 16302 respondents who were not living with a partner at the time of the interview. Despite this selection, additional inspections of the data showed that we were able to include a high proportion of first, second, and third births (~90%), which occur in the whole sample. We acknowledge, however, the selective nature of our sample, and we discuss the consequences of this in the conclusion section.

We also dropped couples without information on partners' education (n=244) and same-sex couples. To keep the sample homogenous, we excluded couples in which one of the partners had a child from a previous relationship (n=3077). Since the focus of the study is fertility, we selected couples in which the woman was 15-45 years old at the beginning of the co-residential union. We start our observational period at the time of co-residential union, and we censor the couple after 15 years or at the time of the interview, whichever comes first. We dropped couples who had missing information about the timing of union formation (n=99) and first birth (n=28). Since we apply event history analyses, we need to exclude couples with a negative time to event, that is, couples who had their first child before the start of the co-residential union (n=1219); the final sample totaled of 23363 couples.

With regard to higher order births, the time process is given by the time spent from the previous birth till the subsequent conception, and censoring occurred after 15 years (or interview time). The couples at risk of having a second child were those who had a first child. We dropped respondents with an invalid time to event for survival analysis (n=88), and we obtained a total sample of 19225 couples. The procedure for the third birth is the same as the one followed for the second birth. The respondents at risk were those who had a second child during the observational period. Overall, 7386 cases were deleted because they did not experience a second birth, and 51 cases were excluded because of a negative time to event. The total sample for the third birth amounted to 11876 couples. See Table 3.A1 in Appendix 3.A for details regarding the sample selection.

Main independent variables

Pairing by level of education

The educational pairing is defined as the combined educational attainment of the partners. Collapsing categories from the international standard classification of education (ISCED 1997), we grouped individuals into three levels of attainment: low, medium, and high. The first group includes those who completed primary plus lower secondary school (at least 8 years of schooling, ISCED 0, 1, 2). The medium category consists of individuals who attained the upper-secondary and post-secondary level (ISCED 3, 4). Finally, respondents and their partners were defined highly educated if they received a bachelor/master/PhD degree (ISCED 5, 6). Next, we used a compound measure which interacts partners' educational levels, and we distinguished three categories: couples where men and women have the same educational attainment, i.e., homogamous couples ("both low" (1); "both medium" (2), "both high" (3)); two categories for hypergamy (couples in which man is highly educated and the woman medium or low educated (4), and couples in which men are medium educated and women low educated (5)); two categories for hypogamy (couples in which the woman is highly educated and the man medium or low educated (6), and couples in which women are medium educated and men low educated (7)).

Pairing by earning potential given the field of study

The field of study variable in GGS was collected as an open question, and it refers to the main discipline of the highest level of education attained. To harmonize the categories across countries and across surveys, since we needed a compatible variable between GGS and the

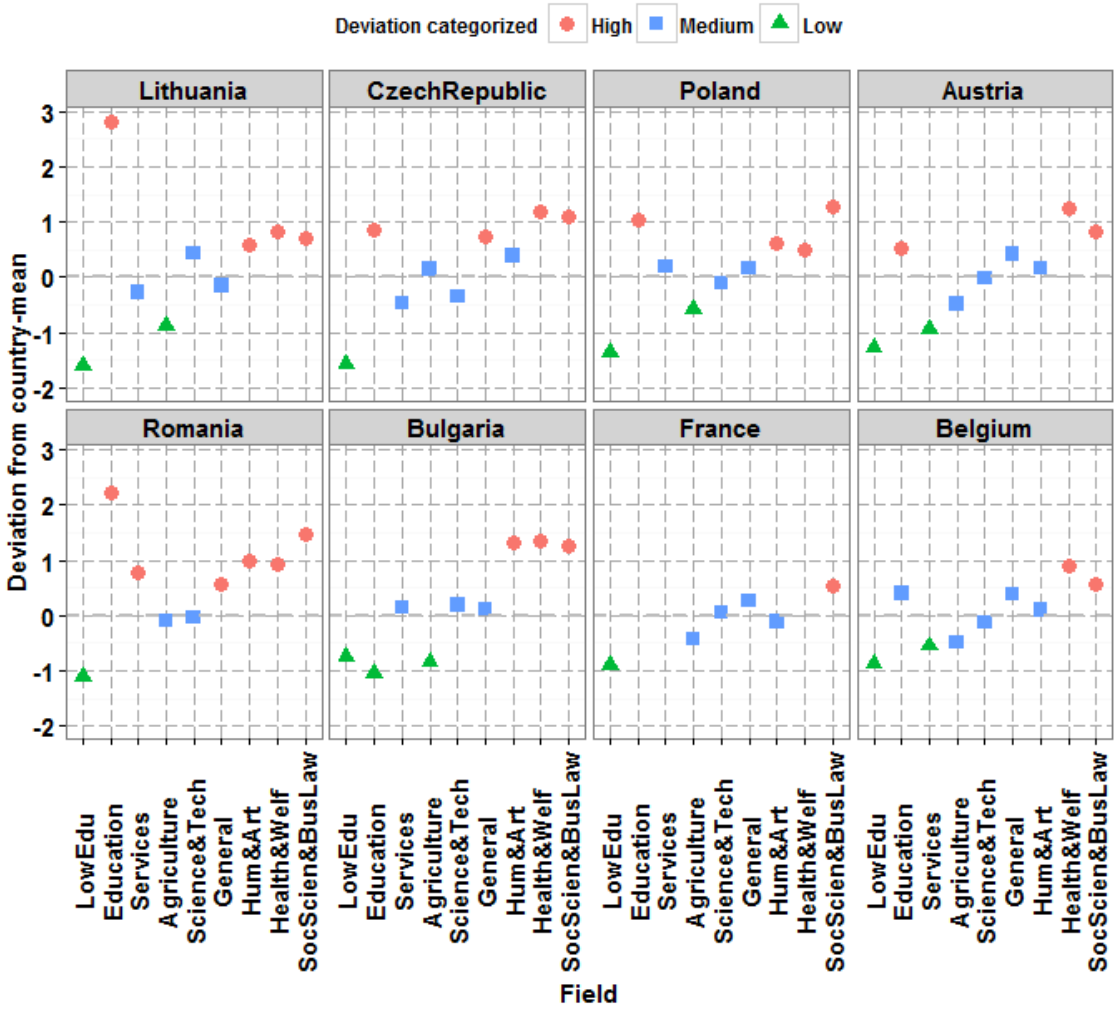
European Labor Force Surveys (EU-LFS), we followed UNESCO/ISCED guidelines[8] for the field of study. The variable consists of nine categories, including general/unspecified field (1); humanities and arts (2); social sciences/business/law (3); science and technology (4); agriculture (5); education (6); health and welfare (7); services (8). A detailed description of each category is available in Table 2.A1 of Appendix 2.A (cf. Chapter 2). These categories refer to respondents with a medium or high level of education only, since the field of study in EU-LFS surveys is not applicable for low educated individuals (ISCED <= 2), this group represents a separate category.

We used the 2009-2013 EU-LFS data and by means of OLS regressions, we estimated the earning potential (measured in income deciles). Overall, we estimated 144 OLS regressions, one for each cluster defined by three variables: field of study (9 categories), country (8 categories), and sex (2 categories). Appendix 2.A explains the procedure in the detail (cf. Chapter 2). Next, given the OLS estimations, we predicted the income deciles for the age group 50-54 in the year 2009, these values were linked to the GGS respondents based on their country, field of study, and sex. We finally included in our models the earning potential of each partner as deviation from the mean of the country to indicate variation in earning potential within the country, i.e., across fields of study.

In all models, we kept the earning potential indicator as a continuous variable. In order to construct an indicator of partners' combined earning potential, we categorized the earning potential in three groups: low (deviation lower or equal -0.5), medium (deviation comprised between -0.5 and 0.5), and high (deviation higher or equal 0.5). Next, we constructed an indicator of relative partners' earning potential: homogamous couples, i.e., both partners are in the same category of earning potential; hypergamous couples, i.e., the man has a higher earning potential than his partner; and hypogamous couples, i.e., the woman has a higher earning potential than her partner. Figures 3.1 and 3.2 show the deviation from the mean of the country, i.e. the earning potential, in both a continuous and categorical scale for men and women, respectively.

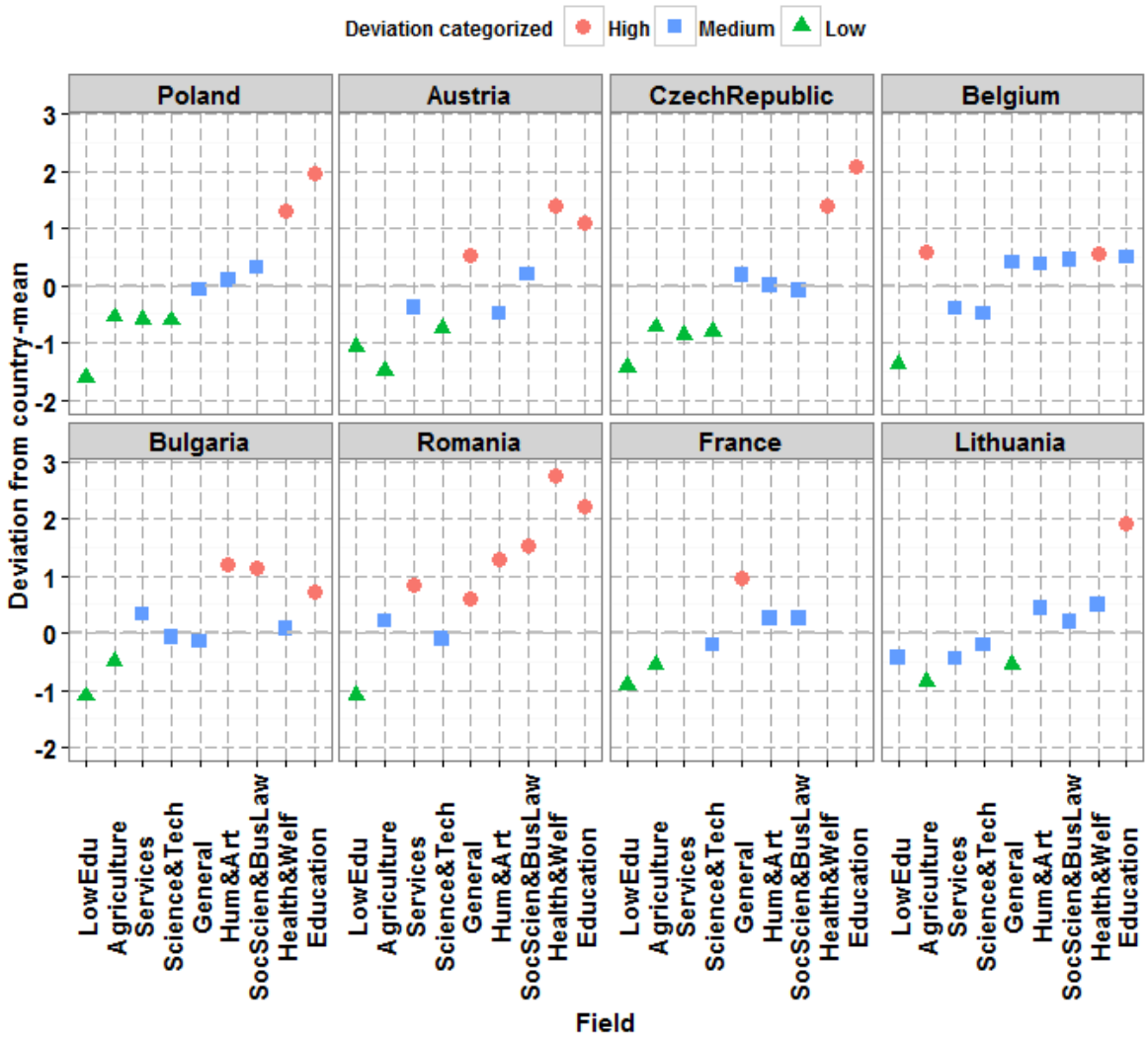
[8] http://www.uis.unesco.org/Education/Pages/international-standard-classification-of-education.aspx accessed the 14th September 2015.

Figure 3.1 Deviation from the mean of the country: men



Sources: Own calculations on EU-LFS and GGS data
Notes: Education, Services and Health & Welfare are not available categories in French GGS data

Figure 3.2 Deviation from the mean of the country: women



Sources: Own calculations on EU-LFS and GGS data
Notes: Education, Services and Health & Welfare are not available categories in French GGS data

Pairing by type of field

We further used the UNESCO/OECD/Eurostat database on education—which is an administrative data collection that is administered jointly by the United Nations Educational, Scientific, and Cultural Organization - Institute for Statistics (UNESCO-UIS), the Organization for Economic Co-operation and Development (OECD), and the Statistical Office of the European Union (EUROSTAT)—to obtain the share of women within a field by country and across levels of education. This database has time series from 1998 till 2012 for the absolute number of graduates (both sexes) in each field of study, excluding the

general/unspecified field[9]. We extracted the number of females and the total number of graduates for each field and country, pooling data of ISCED 1997 from level 3 to 6 to calculate the proportion of women by country and field. We calculated the proportion of women by field, country, and year, and we averaged over the years available[10] for each country (see Chapter 2, Figure 2.1 that shows the share of women by field of study and country).

To classify each field according to the share of women, we partly followed the categorization proposed by Oppermann (2014), who defined male-dominated fields with a share of women lower than 40% and female-dominated fields if the share was higher than 85%. We used a symmetrical categorization, instead, to obtain more balanced categories: (1) male-dominated fields of study (proportion of women lower than 40%); (2) balanced (proportion of women between 40-60%); (3) female-dominated (proportion of women higher than 60%); a missing category (low educated group). Then, we created a variable that represents the pairing by type of field; overall, there would be 16 categories, but we will only focus on categories that do not include a low educated partner.

Other control variables

In all models, we controlled for the age difference between partners: age difference of 0 or 1 (age homogamy); if the woman is older than the man; the man is older than the woman between 2-4 years; or the man is older than the woman 5 years or more. Furthermore, we included the respondent's sex, respondent's enrollment in education (time varying); union's order of the respondent, and the type of union as time varying covariate. In models of first birth, we accounted for the woman's age at union formation (centered at age 22) and its square. For higher order births, we included the woman's age at first birth centered at age 25 and its square. Table 3.1 gives detailed information on the composition of total sample and descriptive statistics about the independent variables.

[9] Since Eurostat does not provide information on the general/unspecified field of study, we calculated the proportion of women in this category using GGS data themselves, considering all men and women born between 1960-1987 with at least upper secondary degree.

[10] We dropped year 2003 for Romania because of inconsistency in the data: the number of graduated women in two fields of study, Humanities-Arts and Social Sciences-Business, was higher than the total number of graduates.

Table 3.1 Detailed description of the sample

	Austria	Belgium	Bulgaria	CzechR.	France	Lithuania	Poland	Romania	Total
Respondent's sex (%)									
Male	37.97	45.74	36.83	44.93	42.24	52.18	42.93	49.07	43.99
Female	62.03	54.26	63.17	55.07	57.76	47.82	57.07	50.93	56.01
Union's cohort (%)									
1975-1989	18.73	24.34	39.85	27.80	27.20	28.46	21.48	33.89	27.72
1990-1999	41.68	36.75	44.32	39.67	46.13	38.75	34.94	48.50	41.34
2000-2010	39.59	38.91	15.83	32.53	26.67	32.79	43.57	17.60	30.94
Educational pairings (%)									
Both low educated	3.49	8.83	13.93	2.79	5.38	2.78	1.56	12.12	6.36
Both medium educated	52.32	17.46	45.18	64.69	29.95	48.80	52.13	52.09	45.33
Both highly educated	11.11	35.70	13.15	8.09	26.02	16.41	18.75	9.13	17.29
He high she lower	13.58	8.10	3.50	9.25	7.48	8.82	5.00	3.61	7.42
He medium she low	8.30	6.05	5.45	3.99	7.56	3.06	3.28	15.23	6.62
He lower she high	7.92	16.30	13.23	5.62	15.65	14.62	15.25	3.58	11.52
He low she medium	3.28	7.57	5.55	5.57	7.96	5.51	4.02	4.24	5.46
Union's order (%)									
First union	84.33	65.56	98.67	94.11	87.41	97.51	97.77	98.54	90.49
Higher order	15.67	34.44	1.33	5.89	12.59	2.49	2.23	1.46	9.51
Age difference (%)									
Age homogamy	21.97	26.92	19.38	23.59	26.80	26.01	25.02	18.60	23.54
Woman older 2+	12.35	12.57	6.90	7.72	12.59	10.45	10.27	8.29	10.14
Man older 2-4	37.63	37.12	37.80	41.04	37.04	42.87	39.02	36.20	38.59
Man older 5+	28.05	23.40	35.92	27.64	23.57	20.66	25.68	36.92	27.73
Pairing earning potential(%)									
Homogamy	46.49	59.10	63.26	40.41	58.20	51.29	43.46	60.84	52.88
Hypergamy	28.91	19.56	9.58	45.93	31.18	31.40	42.85	23.15	29.07
Hypogamy	24.61	21.35	27.15	13.66	10.63	17.31	13.69	16.01	18.05
Pairing by gender composition of the field (%)									
Both male	5.02	6.26	18.18	10.14	11.85	10.00	14.12	38.94	14.31
Both balanced	9.62	10.94	1.88	7.09	0.66	11.64	1.11	3.08	5.75
Both female	10.26	11.99	13.18	16.08	19.41	15.31	23.73	4.24	14.28
She male/He balanced	1.06	7.10	3.84	3.15	0.92	4.29	1.52	1.96	2.98
She male/He female	1.36	6.10	3.48	1.68	5.29	2.82	3.38	5.86	3.75
She male/He low	0.30	4.47	2.05	0.89	1.36	1.39	1.52	3.55	1.94
She balanced/He male	20.60	5.42	4.90	6.36	0.48	8.78	3.54	3.30	6.67
She balanced/He female	4.34	6.83	0.82	2.79	0.17	3.84	0.68	1.12	2.57
She balanced/He low	1.58	4.63	1.28	1.42	0.09	2.41	0.51	0.44	1.55
She female/He male	22.78	9.15	21.94	26.96	35.11	19.84	39.10	8.38	22.91
She female/He balanced	8.60	8.62	6.54	13.24	2.49	10.58	3.63	1.34	6.88
She female/He low	1.75	2.05	2.46	3.31	8.44	3.18	2.30	0.34	2.98
She low/He male	6.30	1.21	3.14	2.21	6.43	1.22	2.60	12.90	4.50
She low/He balanced	1.40	3.52	1.21	1.26	0.35	1.59	0.35	0.75	1.30
She low/He female	1.53	2.89	1.18	0.63	1.57	0.33	0.33	1.68	1.27
Both low	3.49	8.83	13.93	2.79	5.38	2.78	1.56	12.12	6.36
Her earning potential (mean)	4.79	5.43	3.78	4.55	4.30	3.95	5.56	3.47	4.48
His earning potential (mean)	6.06	6.59	5.40	5.69	6.04	5.02	6.90	4.96	5.83
Woman's age at union formation (mean)	22.72	23.81	20.84	22.14	22.84	22.14	22.98	21.44	22.36
Number of events									
First births	1736	1515	3738	1409	1769	1966	4414	2751	19298
Second births	1193	1056	2164	896	1312	1058	2833	1408	11920
Third births	322	322	242	153	412	177	844	284	2767
N	2349	1902	4143	1903	2287	2449	5120	3210	23363

Source: Own calculations on GGS data

Analytical strategy

We apply piecewise linear hazard models to estimate the effect of pairing by education and field of study on first, second, and third birth rates, using the aML software (Lillard and Panis 2003). When studying the effect of education on higher order births, several studies argued that is important to account for the selection into parenthood (Kravdal 2001; Kravdal 2007; Kreyenfeld 2002). Following Kravdal (2001), we controlled for the selectivity into parenthood by modeling first, second, and third births jointly, where birth episodes are nested within couples. The system of equations can be formally displayed as follows:

$$\ln h(t)^1 = \gamma\,'T(t) + \beta\,'X(t) + \varepsilon$$
$$\ln h(t)^2 = \gamma\,'T(t) + \beta\,'X(t) + \varepsilon$$
$$\ln h(t)^3 = \gamma\,'T(t) + \beta\,'X(t) + \varepsilon$$

The superscripts 1, 2, and 3 refer to the equation for the first, second, and third birth, respectively, and $\ln h(t)$ is the log-hazard of occurrence at time *t*. In the equation for first birth, $\gamma\,'T(t)$ is a piecewise linear transformation of time since household formation, with nodes at 2, 3, 5, 7, and 10 years. For the second and third birth, $\gamma\,'T(t)$ is a piecewise linear transformation of time since previous birth, with nodes at 2, 4, 6 and 11 years. The covariate profile (both for fixed and time-varying covariates) is given by $\beta'X(t)$, which shifts the baseline hazard up or down. The random variable ε represents the unobserved heterogeneity term, which is assumed to be normally distributed with mean 0 and variance σ^2, which will be estimated. The distribution of ε is approximated by ten integration points in our models. Separate modeling for each birth transition consists of excluding ε in each equation. To take into account the unobserved factors related to countries' characteristics, we used a country-fixed effect approach by estimating countries' dummies in all of our models (Wooldridge 2010; Bryan and Jenkins 2015).

We proceeded by estimating models based on two different samples. A first set of models included the low educated partners. In order to test the effect of pairing by type of field, which is not available for the low educated group, we opted to run analyses only with a sample of medium and highly educated partners. Thus, in the latter case, we will have pairings that are constituted by only medium and highly educated people.

Results

In this section we show and discuss the results concerning the main independent variables, the estimates of the control variables can be found in Appendix 3.B. Overall, we found that the effect of earning potential is the same for both partners: a higher earning potential tends to slow down the transition to first and higher order births. The role of education, depending on the birth order, differs between partners. In the following sections, we discuss in detail the results for the first and higher order births by showing both models with and without the group of low educated partners. The last section deals with deviations from the general pattern.

First births

The results for first births point towards a more traditional pattern of the role of educational resources within the couple. The first model (Table 3.2 - M1) shows the effect of educational pairing after accounting for the control variables. Couples with one highly educated woman or two highly educated partners tend to have a lower first birth rates compared to the hypergamous couples with a highly educated man. This is in line with our second hypothesis according to which an imbalance of education in favor of the man, i.e., the man is more educated than the woman, is conducive to fertility. However, these hypergamous couples do not have higher first birth rates overall: low and medium educated homogamous couples have higher first birth rates. The low educated homogamous couples have even higher first birth rates compared to their medium educated counterpart.

Once we include the earning potential by field of study (Table 3.2 – M2, M3, M4), the educational gradient is weakened only to some extent. The earning potential has a negative sign for both partners, indicating that fields with higher deviation from the country mean delay the transition to parenthood overall. However, only the male partner's earning potential is significant. Findings indicate that even after controlling for the earning potential, hypogamous and hypergamous couples differ. The difference between the hypergamous and hypogamous couples with a highly educated partner is more marked. In general, a higher level of woman's education negatively affects the transition to first birth. Still, even if hypergamous couples have higher rates than hypogamous couples, we found that hypogamous couples with a highly educated woman have 17% higher first birth rates than couples where both partners are highly educated (t-statistic=4.83). We do not find, instead, any statistically

significant difference between hypergamous and hypogamous couples concerning the differential in earning potential (M5).

The gradient in first births points towards the fact that a higher earning potential in terms of profitable field of study leads to a postponement of first birth, which is in contrast with our third hypothesis, according to which a higher earning potential enhances fertility. Similarly, a high level of education tend to delay the transition to first birth overall. This effect is particularly strong if the partner with the highest level of education is the woman. The findings are more in line with the second hypothesis: a high level of education for the man is associates with higher first birth rates only if the man is not partnered with a highly educated woman.

Only medium and highly educated partners

To test our fourth hypothesis about the effect of pairing by type of field, we ran models considering a sample comprised of medium and highly educated partners only (Table 3.2 - M6). The results for the effect of educational pairings are in line with those obtained by including all the levels of education.

We tested our fourth hypothesis by comparing the gender stereotypical couples, i.e., the man graduated in a male-dominated field and the woman graduated in a female-dominated field, with all the other pairings by type of field. As expected, gender-stereotypical couples tend to have higher first birth rates overall. However, only in two cases is there a statistical significant difference, i.e., when both partners graduated in a balanced field or female-dominated field. Namely, fields with more women do not necessarily lead towards higher fertility for both partners, at least with regard to first births.

Table 3.2 Regression coefficients for the transition to first birth: joint model

	M1		M2		M3		M4		M5		M6	
Educational pairing (Ref. He high she lower)												
Both low	0.337	***	0.311	***	0.232	***	0.217	***	0.217	***		
	(0.055)		(0.058)		(0.061)		(0.063)		(0.063)			
Both medium	0.096	*	0.094	*	0.077	*	0.076	*	0.076	*	0.093	*
	(0.038)		(0.038)		(0.038)		(0.038)		(0.038)		(0.040)	
Both high	-0.320	***	-0.317	***	-0.317	***	-0.315	***	-0.315	***	-0.326	***
	(0.041)		(0.041)		(0.041)		(0.041)		(0.041)		(0.043)	
He medium she low	0.284	***	0.258	***	0.263	***	0.246	***	0.243	***		
	(0.052)		(0.056)		(0.053)		(0.056)		(0.057)			
He lower she high	-0.132	**	-0.127	**	-0.155	***	-0.151	***	-0.152	***	-0.143	**
	(0.044)		(0.044)		(0.044)		(0.044)		(0.044)		(0.046)	
He low she medium	0.107		0.104		-0.007		-0.006		-0.011			
	(0.055)		(0.055)		(0.062)		(0.062)		(0.064)			
earning potential woman			-0.019				-0.013		-0.020		0.005	
			(0.015)				(0.015)		(0.024)		(0.028)	
earning potential man					-0.078	***	-0.076	***	-0.070	*	-0.087	**
					(0.020)		(0.020)		(0.027)		(0.033)	
Pairing by earning potential (Ref. He higher potential than she)												
Both similar earning potential									0.004		-0.048	
									(0.031)		(0.035)	
She higher potential than he									0.021		-0.076	
									(0.056)		(0.065)	
Pairing by gender composition of field (Ref. She female-He male)												
Both male											-0.036	
											(0.036)	
Both balanced											-0.109	*
											(0.052)	
Both female											-0.061	†
											(0.034)	
She male he balanced											-0.093	
											(0.060)	
She male he female											-0.018	
											(0.054)	
She balanced he male											-0.087	
											(0.046)	
She balanced he female											-0.075	
											(0.068)	
She female he balanced											-0.025	
											(0.041)	
ln-L	-165418		-165407		-165398		-165386		-165374		-128196	

Notes: Robust standard errors in parentheses; Significance: '†'=10%;'*'=5%; '**'=1%; '***'=0.1%. All models include: duration splines, woman's age at union formation and its square, union's cohorts, respondent's sex, respondent's enrollment, union order of the respondent, type of union, age difference between partners, country dummies.

Higher order births

The results concerning higher order births (displayed in Table 3.3 and Table 3.4) follow a slightly different pattern compared to first births. We found a U-shaped effect of educational pairing on second and third birth rates: both low and highly educated homogamous couples have a higher rate compared to medium homogamous couples. Hypergamous couples, despite having higher birth rates than medium homogamous educated couples, do not statistically differ from the highly educated homogamous couples. Hypogamous couples with a highly educated woman have a lower risk of second and third births compared to the hypergamous couples with a highly educated man (M1 in Table 3.3 and Table 3.4).

After controlling for the earning potential of male and female partners, both types of hypogamous couples have lower second birth rates than hypergamous couples (Table 3.3 – M4). Our findings suggest that hypogamous couples are those with the lowest second and third birth rates, which is in line with the second hypothesis about the role of educational imbalance in favor of the man. Still, hypergamous couples and couples where both partners are highly educated do not differ statistically.

Overall, these findings do not completely fit any of our hypotheses: a highly educated woman has higher second and third birth rates only if she mates with a highly educated partner. This is in line with theoretical arguments according to which highly educated men, who also tend to show gender egalitarian attitudes, may boost fertility, since it is likely that they are more willing to equally share the domestic work with their partners.

Next, similarly to the results for first birth, we found that both partners' earning potential is negatively associated with second and third birth rates, a finding which highlights the role of opportunity costs for both men and women (M4 in Table 3.3 and Table 3.4). We found that hypergamous couples – in terms of earning potential – have higher second birth rates than homogamous and hypogamous couples. This finding is pretty much in line with the second hypothesis according to which traditional imbalance in the earning potential is conducive to fertility.

Only medium and highly educated partners

The effect of pairing by level of education does not differ between the two sets of analyses. Also, the interaction between partners' earning potential leads to the same findings, i.e., hypergamous couples having higher second birth rates compared to hypogamous and homogamous couples. With regard to either educational pairing or earning potential, we found support for our second hypothesis (M6 in Table 3.3 and Table 3.4).

After inspecting the data, we found that hypergamous couples where the man has a higher potential than the woman are mostly characterized by partners who are graduated in the same field of study; these fields include Science and Technology, Social Sciences, Business and Law, which are not typically conducive to fertility for women according to previous studies (Martín-García and Baizan 2006; Begall 2013; Van Bavel 2010). This finding highlights that assortative mating by earning potential and field of study may lead to different outcomes than those expected based on theories relative to women only.

The gender composition does not explain this finding: after including the pairing by gender composition of the field in the model, we still found that hypergamous couples have higher second birth rates than hypogamous and homogamous couples (Table 3.3 - M6). The pattern of coefficients of the pairing by type of field is in line with our fourth hypothesis regarding the role of gender-stereotypical couples, but there are not significant effects. Moreover, we found that couples composed of a woman who graduated in a female dominated field and a man who graduated in a balanced field have higher birth rates, both for second and third births (M6 in Table 3.3 and Table 3.4), compared to stereotypical couples. These couples with the highest second and third birth rates are composed of women who graduated in typical feminine studies and men who graduated in Agriculture, since in some countries (i.e., Austria, Czech Republic, France, Poland, and Lithuania), Agriculture is considered a balanced field of study. Lappegård et al. (2011) speculated that men in Agriculture tend to be more traditional in terms of family size, in the sense that they are more inclined to have bigger families.

Table 3.3 Regression coefficients for the transition to second birth: joint model

	M1		M2		M3		M4		M5		M6	
Educational pairing (Ref. He high she lower)												
Both low	0.550	***	0.451	***	0.355	***	0.283	***	0.311	***		
	(0.064)		(0.069)		(0.072)		(0.075)		(0.076)			
Both medium	-0.056		-0.065		-0.089		-0.095	*	-0.093	*	-0.055	
	(0.047)		(0.047)		(0.047)		(0.047)		(0.047)		(0.049)	
Both high	0.026		0.039		0.032		0.043		0.034		0.017	
	(0.052)		(0.052)		(0.052)		(0.052)		(0.052)		(0.054)	
He medium she low	0.202	**	0.102		0.167	**	0.085		0.086			
	(0.062)		(0.066)		(0.062)		(0.066)		(0.068)			
He lower she high	-0.190	***	-0.170	**	-0.231	***	-0.211	***	-0.197	***	-0.201	***
	(0.055)		(0.055)		(0.056)		(0.056)		(0.056)		(0.058)	
He low she medium	0.005		-0.006		-0.203	**	-0.199	**	-0.174	*		
	(0.065)		(0.065)		(0.073)		(0.074)		(0.075)			
earning potential woman			-0.075	***			-0.064	***	0.031		-0.003	
			(0.019)				(0.019)		(0.031)		(0.037)	
earning potential man					-0.148	***	-0.139	***	-0.235	***	-0.197	***
					(0.026)		(0.026)		(0.036)		(0.043)	
Pairing by earning potential (Ref. He higher potential than she)												
Both similar earning potential									-0.146	***	-0.135	**
									(0.038)		(0.043)	
She higher potential than he									-0.284	***	-0.178	*
									(0.071)		(0.083)	
Pairing by gender composition of field (Ref. She female-He male)												
Both male											-0.003	
											(0.044)	
Both balanced											-0.031	
											(0.065)	
Both female											-0.044	
											(0.042)	
She male he balanced											-0.048	
											(0.075)	
She male he female											-0.043	
											(0.069)	
She balanced he male											-0.013	
											(0.055)	
She balanced he female											-0.103	
											(0.087)	
She female he balanced											0.140	**
											(0.050)	
ln-L	-165418		-165407		-165398		-165386		-165374		-128196	

Notes: Robust standard errors in parentheses; Significance: '†'=10%; '*'=5%; '**'=1%; '***'=0.1%. All models include: duration splines, woman's age at first birth and its square, union's cohorts, respondent's sex, respondent's enrollment, union order of the respondent, type of union, age difference between partners, country dummies.

Table 3.4 Regression coefficients for the transition to third birth: joint model

	M1		M2		M3		M4		M5		M6	
Educational pairing (Ref. He high she lower)												
Both low	1.269	***	1.308	***	1.036	***	0.937	***	0.973	***		
	(0.105)		(0.084)		(0.129)		(0.134)		(0.135)			
Both medium	-0.157		0.219	**	-0.193	*	-0.200	*	-0.196	*	-0.117	
	(0.089)		(0.072)		(0.089)		(0.089)		(0.089)		(0.097)	
Both high	0.030		0.168		0.034		0.052		0.046		0.033	
	(0.101)		(0.089)		(0.101)		(0.102)		(0.102)		(0.109)	
He medium she low	0.380	***	0.418	***	0.341	**	0.228	*	0.212			
	(0.107)		(0.086)		(0.107)		(0.116)		(0.118)			
He lower she high	-0.336	**	-0.136		-0.384	***	-0.352	**	-0.341	**	-0.330	**
	(0.113)		(0.088)		(0.114)		(0.116)		(0.116)		(0.123)	
He low she medium	0.109		0.262	**	-0.136		-0.132		-0.138			
	(0.117)		(0.089)		(0.139)		(0.140)		(0.143)			
earning potential woman			-0.100	**			-0.089	*	-0.016		-0.110	
			(0.038)				(0.038)		(0.061)		(0.074)	
earning potential man					-0.176	**	-0.164	**	-0.245	***	-0.198	*
					(0.056)		(0.056)		(0.073)		(0.094)	
Pairing by earning potential (Ref. He higher potential than she)												
Both similar earning potential									-0.158	*	-0.057	
									(0.072)		(0.082)	
She higher potential than he									-0.208		0.031	
									(0.136)		(0.161)	
Pairing by gender composition of field (Ref. She female-He male)												
Both male											-0.002	
											(0.090)	
Both balanced											0.135	
											(0.121)	
Both female											0.040	
											(0.086)	
She male he balanced											0.012	
											(0.146)	
She male he female											-0.106	
											(0.145)	
She balanced he male											-0.014	
											(0.106)	
She balanced he female											0.059	
											(0.169)	
She female he balanced											0.167	†
											(0.100)	
ln-L	-165418		-165407		-165398		-165386		-165374		-128196	

Notes: Robust standard errors in parentheses; Significance: '†'=10%; '*'=5%; '**'=1%; '***'=0.1%. All models include: duration splines, woman's age at first birth and its square, union's cohorts, respondent's sex, respondent's enrollment, union order of the respondent, type of union, age difference between partners, country dummies.

Deviations from the general pattern

Regional differences

We should keep in mind that the above results are a stylized average of eight different European countries. Appendix 3.C shows results obtained by analyzing sub-groups of countries. What clearly stands out is that the U-shaped effect of educational pairing is mainly a result of the effect of education in very different groups of regions. In southern Eastern countries, i.e., Bulgaria and Romania, second and third birth rates are higher among lowly educated homogamous couples and lower among highly educated homogamous couples. It also emerged that the negative effect of women's high education on second and third birth rates is driven by the presence of Central and Eastern European countries; overall, these findings are in line with previous studies regarding the effect of women's education on second and third birth rates (Klesment et al. 2014; Wood et al. 2014).

Sensitivity analyses

As mentioned in the data section, we have to deal with a selective sample, i.e., we only observe fertility histories of those unions intact at the time of interview. We ran several sensitivity analyses to check how the results could be altered. At first, we analyzed the data by separating them into different cohorts. The youngest cohorts are more heterogeneous in terms of union stability given that their time of union formation is closer to the interview, and thus they may represent a less selective group (results are shown in Appendix 3.D). The analyses based on the sample of the youngest cohorts showed a very similar pattern with regard to the role of educational pairing and earning potential. Next, we specified a model where we censored first births after the first five years of union formation, so that all the couples are observed for the same amount of time. Results seem to be quite in line with our main general findings. In both kinds of sensitivity analyses, however, the effect of hypergamy according to the earning potential seems to be reduced, especially with regard to third birth rates.

Discussion

In this study, we explored the relationship between educational pairing and couples' transition to first, second, and third births. We focused on the earning potential by field of study as an additional dimension of education, beyond the level of educational attainment of the partners. Compared to previous studies, we were able to estimate the earning potential of the field of study, overcoming endogeneity issues that scholars usually face when analyzing the role of

earnings. Moreover, we modeled the parities jointly, accounting for unobserved characteristics of the couple, which drive the selection into parenthood.

Overall, we found consistent support for our second hypothesis according to which an imbalance of earning potential and education in favor of the man may be conducive to fertility. Still, variation across birth parities was found. In general, we found that hypergamous couples composed of a highly educated man tend to have higher first, second, and third birth rates compared to the hypogamous couples with a highly educated woman. While this finding is in line with our second hypothesis, we also found that hypergamous couples do not differ from the highly educated homogamous couples, at least with regard to the transition to higher order births. The fact that a traditional pairing may be conducive to first birth, it does not necessarily imply that is conducive to fertility overall. According to our findings, a highly educated woman enhances her fertility if mated with a highly educated man. This could be explained by the fact that highly educated partners "join forces" in overcoming opportunity costs by finding optimal solutions for both of them (Kravdal 2007; Kravdal and Rindfuss 2008). In particular, it can be that highly educated men behave in a more egalitarian way with their partners, which enable a highly educated woman to continue with childbearing without renouncing to her career.

The role of educational level is quite different from the role of earning potential, since in all our models we found that a higher earning potential, especially of the male partner, leads to lower birth rates. These findings are against the expectation that a higher earning potential is positively associated with fertility (hypothesis 3). We found that an imbalance of earning potential in favor of the man enhances fertility which, in contrast, is line with the second hypothesis. Hypergamous couples showed higher second and third birth rates compared to hypogamous and homogamous couples.

The main findings hold even when we exclude from the sample the lowly educated group. We had to ran separated analyses with a selected sample of medium and highly educated partners to test our fourth hypothesis regarding the role of pairing by type of field. We did not find evidence that gender-stereotypical couples have higher fertility rates than other pairings. The gender composition of the type of field does not play a role itself but via the role of earning potential.

It could be, however, that the estimation of the earning potential may be rough due to the heterogeneity in terms of earnings within each group of fields considered. For instance, cultural studies, which typically lead to a lower earning potential, had to be clustered with

business and management, which instead are much more profitable. Unfortunately, EU-LFS data do not allow a more detailed estimation. Moreover, in order to avoid problems of endogeneity with the estimation of earning potential, we did not include part-time individuals; otherwise, especially for women, the estimation could have reflected labor force participation, which is also dependent on the motherhood status. However, since we only consider full-time working people, part of the differentials in the labor market success across fields of study is eliminated. In the future, it would be good to account for unemployment risks, if feasible, keeping in mind that unemployment risks are strongly related to the parenthood status as well. Future studies could approach the problem differently by exploring different scenarios, e.g., where women have same unemployment risks and earning potential of childless men.

As already mentioned, our sample suffers from a selection bias since we only included unions that were intact at interview. As a result, it is likely that our sample includes more stable unions that tend to be more conducive to overall childbearing. The selectivity would not be a problem if dissolution rates are random across educational pairings. However, some divorce studies showed that when the woman is more educated than her partner, the couple is more likely to dissolve (Kalmijn 2003; Mäenpää and Jalovaara 2014). Changes over time have been observed since the women's negative educational gradient in divorce rates is flattening out (Härkönen and Dronkers 2006; Matysiak et al. 2014). Country-specific studies showed that educational hypogamy does not necessarily lead to higher divorce rates, especially with regard to unions formed in the 1990s and afterwards (see Schwartz and Han 2014 for the United States and Theunis et al. 2015 for Belgium).

In order to check the sensitivity of our results to a possible sample-selection effect, we ran alternative models: (1) separating by group of cohorts and (2) censoring the first births after five years of union formation. Overall, results seem to be in line with the general pattern. In the future, it would be wise to switch from a retrospective to a prospective approach by using longitudinal data, if available, in a way that union dissolution could be integrated in the framework. The use of longitudinal data would also help in avoiding possible biases related to anticipatory effects (Hoem and Kreyenfeld 2006), since we used education of both partners as a time-constant variable.

Overall, our results with regard to first birth seem to be in line with a recent study that examined the role of educational pairings on fertility in several European countries by using EU-SILC data (Nitsche et al. 2015). With regard to higher order births, however, we have different results. The authors found that highly educated homogamous couples tend to have

higher second and third birth rates compared to other pairings in general, and compared to hypergamous couples with a highly educated man in particular. In our study, we found no statistically significant difference between those hypergamous couples and the highly educated homogamous couples. This discrepancy may be associated with a different composition of the sample of countries. In contrast to Nitsche et al. (2015), our sample is constituted of several Central and Eastern European countries, where more traditional patterns are still observed. If we look at the results by group of countries, we found that only in Western European countries highly educated homogamous couples have higher second birth rates compared to other pairings, which is line with Nitsche et al. (2015). Still, this effect does not hold for third birth rates and for any other group of countries. Thus, it is also possible that the results of Nitsche et al. (2015) partly suffer of a selection bias, given that birth rates were not modeled jointly as we did in this study. In fact, without controlling for unobserved heterogeneity, we would have underestimated the positive effect of lower education on higher order births.

Further investigations are necessary to really understand the role of educational pairing for fertility. The next challenge will be to study macro-level factors related to the role of educational assortative mating for fertility. Our study gives a stylized average of eight different European countries, without delving deeper into country differences. As mentioned above, the pattern we obtained by analyzing separated regions clearly highlights differences among these European countries about the role of women and men in families. Notwithstanding, Western countries are not at the end of the Gender Revolution (Goldscheider et al. 2015), they are probably at a more advanced stage compared to, for instance, southern Eastern countries. Educational assortative mating may eventually have similar effects on fertility across European countries, which is in line with theories about the role of gender egalitarianism (Esping-Andersen and Billari 2015; Goldscheider et al. 2015). However, this convergence may not occur so quickly and the impact of educational assortative on fertility may have consequences for the reproduction of social inequalities in society. A polarized behavior of fertility in Europe (e.g., more educated couples have higher fertility rates in the West, whereas lower educated couples have higher fertility in the East) may lead to a widening of inequalities across European countries.

Appendices

Appendix 3.A

Table 3.A1 Sample selection

	N
Initial sample size	44690
not in co-residential union	16302
respondent education missing	71
partner's respondent education missing	173
Homosexual couples	89
Previous children from other relationships	3077
Date union missing	99
Date first birth missing	28
Woman's age missing	249
Time of birth <= date of union	1219
Male partner's age missing or < 15 at time of union	20
Sample first births	23363
Sample second births	19225
Sample third births	11876

Source: Own calculation on GGS data

In order to test the sensitivity of our analyses to the choice of first birth instead of first conception we ran analyses with a sample based on conception, for this reason we had to drop 3792 couples. Results, however, remains substantially the same.

Appendix 3.B

Table 3.B1 Regression coefficients for the transition to first birth, control variables

	M1		M2		M3		M4		M5		M6	
0-2	0.582	***	0.583	***	0.583	***	0.584	***	0.584	***	0.559	***
	(0.017)		(0.017)		(0.017)		(0.017)		(0.017)		(0.019)	
2-3	-0.531	***	-0.532	***	-0.532	***	-0.532	***	-0.532	***	-0.498	***
	(0.034)		(0.034)		(0.034)		(0.034)		(0.034)		(0.038)	
3-5	0.050	*	0.050	*	0.050	*	0.050	*	0.050	*	0.058	*
	(0.024)		(0.024)		(0.024)		(0.024)		(0.024)		(0.026)	
5-7	-0.096	**	-0.096	**	-0.096	**	-0.096	**	-0.096	**	-0.089	**
	(0.030)		(0.030)		(0.030)		(0.030)		(0.030)		(0.033)	
7-10	-0.123	***	-0.123	***	-0.123	***	-0.123	***	-0.123	***	-0.117	***
	(0.030)		(0.030)		(0.030)		(0.030)		(0.030)		(0.033)	
10+	-0.227	***	-0.227	***	-0.227	***	-0.227	***	-0.227	***	-0.220	***
	(0.039)		(0.039)		(0.039)		(0.039)		(0.039)		(0.042)	
Constant	-0.909	***	-0.906	***	-0.878	***	-0.876	***	-0.884	***	-0.749	***
	(0.050)		(0.050)		(0.051)		(0.051)		(0.060)		(0.071)	
Union's cohort (Ref. 1990-1999)												
1975-1989	0.007		0.007		0.007		0.006		0.006		0.064	*
	(0.022)		(0.022)		(0.022)		(0.022)		(0.022)		(0.025)	
2000-2010	-0.189	***	-0.189	***	-0.184	***	-0.184	***	-0.184	***	-0.194	***
	(0.025)		(0.025)		(0.025)		(0.025)		(0.025)		(0.027)	
woage22	-0.021	***	-0.020	***	-0.020	***	-0.020	***	-0.020	***	-0.011	*
	(0.004)		(0.004)		(0.004)		(0.004)		(0.004)		(0.005)	
woag22s	-0.001		-0.001		-0.001		-0.001		-0.001		-0.001	
	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.001)	
Respondent enrollment (Ref. Not enrolled)	-0.093	**	-0.091	**	-0.090	**	-0.090	**	-0.090	**	-0.068	*
	(0.028)		(0.028)		(0.028)		(0.028)		(0.028)		(0.030)	
Sex respondent (Ref. Female)	-0.087	***	-0.087	***	-0.087	***	-0.087	***	-0.087	***	-0.089	***
	(0.018)		(0.018)		(0.018)		(0.018)		(0.018)		(0.021)	
Age difference (Ref. Difference <=1)												
She older than he (2+ years)	0.100	**	0.101	**	0.102	**	0.102	**	0.102	**	0.140	***
	(0.037)		(0.037)		(0.037)		(0.037)		(0.037)		(0.041)	
He older than she (2-4 years)	0.033		0.033		0.034		0.034		0.034		0.041	
	(0.023)		(0.023)		(0.023)		(0.023)		(0.023)		(0.026)	
He older than she (5+)	0.048		0.048		0.047		0.047		0.047		0.055	
	(0.026)		(0.026)		(0.026)		(0.026)		(0.026)		(0.030)	
Respondent union order (Ref. First union)	0.150	***	0.150	***	0.150	***	0.150	***	0.151	***	0.158	***
	(0.040)		(0.040)		(0.040)		(0.040)		(0.040)		(0.046)	
Couple's marital status (Ref. Married)												
Unmarried	-1.668	***	-1.668	***	-1.667	***	-1.667	***	-1.667	***	-1.880	***
	(0.030)		(0.030)		(0.030)		(0.030)		(0.030)		(0.036)	
Unknown	-1.186	***	-1.186	***	-1.185	***	-1.185	***	-1.185	***	-1.374	***
	(0.032)		(0.032)		(0.032)		(0.032)		(0.032)		(0.039)	
Country (Ref. Bulgaria)												
France	-0.578	***	-0.581	***	-0.587	***	-0.589	***	-0.585	***	-0.607	***
	(0.035)		(0.035)		(0.035)		(0.035)		(0.037)		(0.044)	
Romania	-0.580	***	-0.577	***	-0.583	***	-0.581	***	-0.578	***	-0.677	***
	(0.033)		(0.033)		(0.033)		(0.033)		(0.034)		(0.042)	
Austria	-0.627	***	-0.629	***	-0.641	***	-0.642	***	-0.641	***	-0.618	***
	(0.039)		(0.039)		(0.039)		(0.039)		(0.040)		(0.046)	
Belgium	-0.756	***	-0.759	***	-0.765	***	-0.767	***	-0.766	***	-0.689	***
	(0.039)		(0.039)		(0.039)		(0.039)		(0.039)		(0.046)	
Lithuania	-0.173	***	-0.176	***	-0.185	***	-0.187	***	-0.185	***	-0.239	***
	(0.036)		(0.036)		(0.036)		(0.036)		(0.037)		(0.041)	
Poland	-0.038		-0.043		-0.054		-0.057		-0.053		-0.139	***
	(0.032)		(0.032)		(0.032)		(0.032)		(0.035)		(0.039)	
Czech Republic	-0.379	***	-0.381	***	-0.391	***	-0.392	***	-0.389	***	-0.423	***
	(0.043)		(0.043)		(0.043)		(0.043)		(0.045)		(0.049)	

Notes: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%. Each model included: M1=educational pairing only; M2=M1+ man's earning potential; M3=M1+ woman's earning potential; M4=M1+ both partners' earning potential; M5=M4+ pairing by earning potential; M6=M5+pairing by gender composition of the field, without low educated group.

Table 3.B2 Regression coefficients for the transition to second birth, control variables

Splines	M1		M2		M3		M4		M5		M6	
0-2	0.699	***	0.700	***	0.700	***	0.700	***	0.701	***	0.754	***
	(0.019)		(0.019)		(0.019)		(0.019)		(0.019)		(0.022)	
2-4	-0.183	***	-0.183	***	-0.182	***	-0.182	***	-0.181	***	-0.180	***
	(0.018)		(0.018)		(0.018)		(0.018)		(0.018)		(0.021)	
4-6	-0.125	***	-0.125	***	-0.125	***	-0.125	***	-0.125	***	-0.123	***
	(0.024)		(0.024)		(0.024)		(0.024)		(0.024)		(0.027)	
6-11	-0.260	***	-0.259	***	-0.259	***	-0.259	***	-0.259	***	-0.255	***
	(0.017)		(0.017)		(0.017)		(0.017)		(0.017)		(0.019)	
11+	-0.223	***	-0.223	***	-0.223	***	-0.223	***	-0.223	***	-0.219	***
	(0.053)		(0.053)		(0.053)		(0.053)		(0.053)		(0.059)	
Constant	-3.210	***	-3.190	***	-3.152	***	-3.138	***	-2.976	***	-3.260	***
	(0.064)		(0.064)		(0.065)		(0.065)		(0.076)		(0.092)	
Union's cohort (Ref. 1990-1999)												
1975-1989	0.280	***	0.279	***	0.279	***	0.279	***	0.280	***	0.312	***
	(0.025)		(0.025)		(0.025)		(0.025)		(0.025)		(0.028)	
2000-2010	-0.344	***	-0.342	***	-0.337	***	-0.336	***	-0.335	***	-0.286	***
	(0.036)		(0.036)		(0.036)		(0.036)		(0.036)		(0.040)	
woage25	-0.031	***	-0.030	***	-0.031	***	-0.030	***	-0.030	***	-0.026	***
	(0.004)		(0.004)		(0.004)		(0.004)		(0.004)		(0.005)	
woag25s	0.000		0.000		0.000		0.000		0.000		-0.001	
	(0.001)		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)	
Respondent enrollment (Ref. Not enrolled)	-0.263	***	-0.253	***	-0.256	***	-0.248	***	-0.244	***	-0.218	***
	(0.044)		(0.044)		(0.044)		(0.044)		(0.044)		(0.046)	
Sex respondent (Ref. Female)	-0.053	*	-0.053	*	-0.052	*	-0.052	*	-0.053	*	-0.068	**
	(0.022)		(0.022)		(0.022)		(0.022)		(0.022)		(0.026)	
Age difference (Ref. Difference <=1)												
She older than he (2+ years)	0.022		0.023		0.024		0.025		0.026		0.025	
	(0.046)		(0.046)		(0.046)		(0.046)		(0.046)		(0.052)	
He older than she (2-4 years)	0.020		0.021		0.020		0.021		0.020		0.055	
	(0.029)		(0.029)		(0.029)		(0.029)		(0.029)		(0.032)	
He older than she (5+)	0.070	*	0.068	*	0.065	*	0.065	*	0.066	*	0.092	*
	(0.032)		(0.032)		(0.032)		(0.032)		(0.032)		(0.036)	
Respondent union order (Ref. First union)	0.104		0.102		0.105		0.103		0.103		0.029	
	(0.056)		(0.056)		(0.056)		(0.056)		(0.056)		(0.063)	
Couple's marital status (Ref. Married)												
Unmarried	-0.461	***	-0.460	***	-0.458	***	-0.459	***	-0.457	***	-0.575	***
	(0.056)		(0.056)		(0.056)		(0.056)		(0.056)		(0.068)	
Unknown	-0.465	***	-0.464	***	-0.464	***	-0.464	***	-0.468	***	-0.555	***
	(0.048)		(0.048)		(0.048)		(0.048)		(0.048)		(0.061)	
Country (Ref. Bulgaria)												
France	0.896	***	0.888	***	0.881	***	0.874	***	0.824	***	1.110	***
	(0.042)		(0.042)		(0.042)		(0.042)		(0.044)		(0.055)	
Romania	-0.288	***	-0.279	***	-0.292	***	-0.285	***	-0.319	***	-0.293	***
	(0.041)		(0.041)		(0.041)		(0.041)		(0.042)		(0.054)	
Austria	0.756	***	0.746	***	0.728	***	0.721	***	0.688	***	0.944	***
	(0.047)		(0.047)		(0.047)		(0.047)		(0.048)		(0.056)	
Belgium	0.901	***	0.887	***	0.889	***	0.878	***	0.863	***	1.339	***
	(0.052)		(0.052)		(0.052)		(0.052)		(0.052)		(0.064)	
Lithuania	0.051		0.038		0.028		0.018		-0.020		0.152	**
	(0.045)		(0.045)		(0.045)		(0.045)		(0.047)		(0.052)	
Poland	0.488	***	0.472	***	0.458	***	0.445	***	0.379	***	0.513	***
	(0.035)		(0.036)		(0.036)		(0.036)		(0.039)		(0.046)	
Czech Republic	0.260	***	0.250	***	0.235	***	0.228	***	0.158	**	0.323	***
	(0.047)		(0.047)		(0.047)		(0.047)		(0.050)		(0.056)	

Notes: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%. Each model included: M1=educational pairing only; M2=M1+ man's earning potential; M3=M1+ woman's earning potential; M4=M1+ both partners' earning potential; M5=M4+ pairing by earning potential; M6=M5+pairing by gender composition of the field, without low educated group.

Table 3.B3 Regression coefficients for the transition to third birth, control variables

Splines	M1		M2		M3		M4		M5		M6	
0-2	0.495	***	0.495	***	0.494	***	0.495	***	0.495	***	0.566	***
	(0.040)		(0.040)		(0.040)		(0.040)		(0.040)		(0.052)	
2-4	-0.341	***	-0.341	***	-0.341	***	-0.340	***	-0.340	***	-0.378	***
	(0.039)		(0.039)		(0.039)		(0.039)		(0.039)		(0.049)	
4-6	-0.134	**	-0.134	**	-0.134	**	-0.134	**	-0.134	**	-0.103	
	(0.047)		(0.047)		(0.047)		(0.047)		(0.047)		(0.057)	
6-11	-0.191	***	-0.191	***	-0.191	***	-0.191	***	-0.191	***	-0.174	***
	(0.028)		(0.028)		(0.028)		(0.028)		(0.028)		(0.033)	
11+	-0.128		-0.128		-0.128		-0.128		-0.128		-0.092	
	(0.074)		(0.074)		(0.074)		(0.074)		(0.074)		(0.085)	
Constant	-5.444	***	-5.589	***	-5.365	***	-5.350	***	-5.204	***	-6.258	***
	(0.130)		(0.108)		(0.132)		(0.132)		(0.151)		(0.229)	
Union's cohort (Ref. 1990-1999)												
1975-1989	0.102	*	0.101	*	0.099	*	0.099	*	0.099	*	0.137	*
	(0.045)		(0.045)		(0.045)		(0.045)		(0.045)		(0.055)	
2000-2010	-0.245	**	-0.243	**	-0.239	**	-0.238	**	-0.232	*	-0.231	*
	(0.091)		(0.092)		(0.092)		(0.092)		(0.092)		(0.108)	
woage25	-0.043	***	-0.043	***	-0.044	***	-0.043	***	-0.043	***	-0.038	***
	(0.007)		(0.007)		(0.007)		(0.007)		(0.008)		(0.010)	
woag25s	0.002	*	0.002	*	0.002	*	0.002	*	0.002	*	-0.001	
	(0.001)		(0.001)		(0.001)		(0.001)		(0.001)		(0.001)	
Respondent enrollment (Ref. Not enrolled)	-0.301	**	-0.281	*	-0.288	*	-0.271	*	-0.265	*	-0.251	*
	(0.112)		(0.112)		(0.112)		(0.112)		(0.112)		(0.124)	
Sex respondent: Male (Ref. Female)	-0.054		-0.054		-0.055		-0.054		-0.055		-0.049	
	(0.042)		(0.042)		(0.042)		(0.042)		(0.042)		(0.052)	
Age difference (Ref. Difference <=1)												
She older than he (2+ years)	0.062		0.065		0.068		0.070		0.072		-0.005	
	(0.087)		(0.087)		(0.087)		(0.087)		(0.087)		(0.108)	
He older than she (2-4 years)	-0.067		-0.066		-0.066		-0.066		-0.066		-0.079	
	(0.055)		(0.055)		(0.055)		(0.056)		(0.056)		(0.065)	
He older than she (5+)	0.056		0.055		0.052		0.052		0.053		0.109	
	(0.060)		(0.060)		(0.060)		(0.060)		(0.060)		(0.072)	
Respondent union order (Ref. First union)	0.040		0.040		0.041		0.040		0.041		0.035	
	(0.099)		(0.099)		(0.099)		(0.099)		(0.099)		(0.114)	
Couple's marital status (Ref. Married)												
Unmarried	-0.064		-0.066		-0.060		-0.063		-0.065		-0.301	
	(0.138)		(0.138)		(0.138)		(0.138)		(0.138)		(0.207)	
Unknown	-0.091		-0.090		-0.090		-0.089		-0.093		-0.221	
	(0.097)		(0.097)		(0.097)		(0.097)		(0.097)		(0.137)	
Country (Ref. Bulgaria)												
France	1.940	***	1.934	***	1.917	***	1.912	***	1.876	***	2.791	***
	(0.089)		(0.089)		(0.089)		(0.089)		(0.092)		(0.167)	
Romania	0.638	***	0.646	***	0.617	***	0.625	***	0.598	***	1.251	***
	(0.092)		(0.092)		(0.092)		(0.092)		(0.094)		(0.178)	
Austria	1.616	***	1.609	***	1.571	***	1.567	***	1.537	***	2.423	***
	(0.091)		(0.091)		(0.093)		(0.093)		(0.094)		(0.164)	
Belgium	1.787	***	1.772	***	1.768	***	1.755	***	1.746	***	2.871	***
	(0.097)		(0.098)		(0.097)		(0.098)		(0.098)		(0.171)	
Lithuania	0.852	***	0.840	***	0.804	***	0.797	***	0.765	***	1.576	***
	(0.103)		(0.103)		(0.104)		(0.104)		(0.105)		(0.170)	
Poland	1.685	***	1.662	***	1.634	***	1.617	***	1.559	***	2.424	***
	(0.077)		(0.077)		(0.078)		(0.078)		(0.083)		(0.157)	
Czech Republic	0.907	***	0.893	***	0.863	***	0.852	***	0.792	***	1.636	***
	(0.108)		(0.108)		(0.109)		(0.109)		(0.113)		(0.175)	

Notes: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%. Each model included: M1=educational pairing only; M2=M1+ man's earning potential; M3=M1+ woman's earning potential; M4=M1+ both partners' earning potential; M5=M4+ pairing by earning potential; M6=M5+pairing by gender composition of the field, without low educated group.

Appendix 3.C

Table 3.C1 Models by groups of countries

First	West[a]		Central-Eastern[b]		South-Eastern[c]	
Educational pairing (Ref. Both medium)						
Both low	0.210		0.256	*	0.106	
	(0.117)		(0.124)		(0.072)	
Both high	-0.268	***	-0.506	***	-0.320	***
	(0.051)		(0.044)		(0.055)	
He high she lower	-0.008		-0.154	**	0.036	
	(0.064)		(0.059)		(0.084)	
He medium she low	0.356	***	0.375	***	-0.058	
	(0.098)		(0.094)		(0.081)	
He lower she high	-0.326	***	-0.205	***	-0.121	*
	(0.059)		(0.046)		(0.062)	
He low she medium	-0.038		-0.099		-0.006	
	(0.108)		(0.084)		(0.089)	
earning potential woman	0.001		0.026		-0.069	
	(0.050)		(0.036)		(0.043)	
earning potential man	-0.194	**	-0.057		0.003	
	(0.068)		(0.037)		(0.053)	
Pairing by earning potential (Ref. Both similar earning potential)						
He higher potential than she	0.036		0.011		0.050	
	(0.058)		(0.044)		(0.078)	
She higher potential than he	-0.034		-0.006		0.054	
	(0.069)		(0.063)		(0.070)	
Second						
Educational pairing (Ref. Both medium)						
Both low	0.202		0.148		0.635	***
	(0.124)		(0.138)		(0.091)	
Both high	0.432	***	-0.007		-0.220	**
	(0.063)		(0.057)		(0.077)	
He high she lower	0.145		0.033		0.123	
	(0.078)		(0.073)		(0.107)	
He medium she low	0.180		0.227	*	0.289	**
	(0.101)		(0.104)		(0.108)	
He lower she high	0.051		-0.191	**	-0.244	**
	(0.071)		(0.061)		(0.085)	
He low she medium	-0.245	*	-0.162		0.235	*
	(0.115)		(0.100)		(0.111)	
earning potential woman	0.168	**	0.002		-0.081	
	(0.062)		(0.048)		(0.064)	
earning potential man	-0.179	*	-0.230	***	-0.078	
	(0.082)		(0.053)		(0.073)	
Pairing by earning potential (Ref. Both similar earning potential)						
He higher potential than she	0.137		0.079		0.087	
	(0.071)		(0.056)		(0.107)	
She higher potential than he	0.015		-0.026		-0.091	
	(0.087)		(0.082)		(0.097)	

Table 3.C1 (continued)

Third						
Educational pairing (Ref. Both medium)						
Both low	0.839	***	0.670	**	1.372	***
	(0.189)		(0.205)		(0.329)	
Both high	0.588	***	-0.127		-1.272	*
	(0.108)		(0.127)		(0.515)	
He high she lower	0.380	**	-0.128		0.440	
	(0.127)		(0.157)		(0.310)	
He medium she low	0.440	**	0.448	**	0.423	
	(0.159)		(0.162)		(0.361)	
He lower she high	0.103		-0.453	***	-0.086	
	(0.132)		(0.134)		(0.340)	
He low she medium	0.234		-0.019		-0.419	
	(0.187)		(0.180)		(0.436)	
earning potential woman	-0.096		0.032		-0.401	
	(0.101)		(0.096)		(0.245)	
earning potential man	0.047		-0.282	*	-0.232	
	(0.135)		(0.111)		(0.238)	
Pairing by earning potential (Ref. Both similar earning potential)						
He higher potential than she	-0.080		0.142		0.122	
	(0.123)		(0.105)		(0.342)	
She higher potential than he	0.147		-0.030		0.317	
	(0.142)		(0.155)		(0.353)	
SigmaEps	0.674	***	0.616	***	0.578	***
	(0.029)		(0.020)		(0.026)	
ln-L	-48183		-66049		-49978	

Notes: Robust standard errors in parentheses; a) West=Austria, Belgium and France; b) Central-Eastern=Czech Republic, Lithuania and Poland; c) South-Eastern=Bulgaria and Romania; Significance: '*'=5%; '**'=1%; '***'=0.1%. All models include: duration splines, woman's age at first birth and its square, union's cohorts, respondent's sex, respondent's enrollment, union order of the respondent, type of union, age difference between partners, country dummies.

Appendix 3.D

Table 3.D1 Alternative specification of the model, sensitivity analyses

First	Main model (M5)		Younger cohorts		Censoring first births after 5 years coresidence	
Educational pairing (Ref. Both medium)						
Both low	0.141	**	0.239	***	0.159	**
	(0.050)		(0.064)		(0.050)	
Both high	-0.390	***	-0.455	***	-0.485	***
	(0.029)		(0.033)		(0.031)	
He high she lower	-0.076	*	-0.078		-0.109	**
	(0.038)		(0.045)		(0.040)	
He medium she low	0.167	***	0.297	***	0.181	***
	(0.046)		(0.056)		(0.046)	
He lower she high	-0.227	***	-0.306	***	-0.262	***
	(0.031)		(0.037)		(0.032)	
He low she medium	-0.087		-0.034		-0.061	
	(0.053)		(0.064)		(0.053)	
earning potential woman	-0.020		-0.016		-0.019	
	(0.024)		(0.027)		(0.024)	
earning potential man	-0.070	*	-0.084	**	-0.075	**
	(0.027)		(0.032)		(0.028)	
Pairing by earning potential (Ref. Both similar earning potential)						
He higher potential than she	-0.004		-0.010		0.001	
	(0.031)		(0.036)		(0.032)	
She higher potential than he	0.018		-0.006		0.018	
	(0.038)		(0.044)		(0.039)	
Second						
Educational pairing (Ref. Both medium)						
Both low	0.404	***	0.492	***	0.428	***
	(0.059)		(0.079)		(0.061)	
Both high	0.127	***	0.171	***	0.075	
	(0.036)		(0.044)		(0.038)	
He high she lower	0.093	*	0.118		0.078	
	(0.047)		(0.060)		(0.050)	
He medium she low	0.179	***	0.267	***	0.200	***
	(0.053)		(0.070)		(0.055)	
He lower she high	-0.105	**	-0.121	*	-0.129	**
	(0.040)		(0.049)		(0.042)	
He low she medium	-0.081		-0.077		-0.065	
	(0.060)		(0.079)		(0.062)	
earning potential woman	0.031		0.028		0.019	
	(0.031)		(0.039)		(0.032)	
earning potential man	-0.235	***	-0.229	***	-0.220	***
	(0.036)		(0.044)		(0.037)	
Pairing by earning potential (Ref. Both similar earning potential)						
He higher potential than she	0.146	***	0.123	**	0.115	**
	(0.038)		(0.048)		(0.040)	
She higher potential than he	-0.138	**	-0.097		-0.122	*
	(0.048)		(0.061)		(0.050)	

Table 3.D1 (continued)

Third						
Educational pairing						
(Ref. Both medium)						
Both low	1.168	***	0.982	***	1.137	***
	(0.104)		(0.149)		(0.107)	
Both high	0.241	***	0.200	*	0.245	**
	(0.073)		(0.096)		(0.077)	
He high she lower	0.196	*	0.023		0.207	*
	(0.089)		(0.126)		(0.094)	
He medium she low	0.408	***	0.355	**	0.382	***
	(0.090)		(0.130)		(0.093)	
He lower she high	-0.145		-0.103		-0.172	
	(0.088)		(0.114)		(0.093)	
He low she medium	0.057		0.177		0.006	
	(0.115)		(0.157)		(0.119)	
earning potential woman	-0.016		-0.160		-0.030	
	(0.061)		(0.085)		(0.064)	
earning potential man	-0.245	***	-0.155		-0.248	**
	(0.073)		(0.098)		(0.076)	
Pairing by earning potential						
(Ref. Both similar earning potential)						
He higher potential than she	0.157	*	-0.018		0.128	
	(0.072)		(0.099)		(0.075)	
She higher potential than he	-0.050		0.107		-0.033	
	(0.095)		(0.124)		(0.099)	
SigmaEps	0.669	***	0.646	***	0.650	***
	(0.013)		(0.017)		(0.015)	
ln-L	-165374		-104441		-147665	

Notes: Robust standard errors in parentheses; Significance: '*'=5%; '**'=1%; '***'=0.1%. All models include: duration splines, woman's age at first birth and its square, union's cohorts, respondent's sex, respondent's enrollment, union order of the respondent, type of union, age difference between partners, country dummies.

Chapter 4. Pathways to marital and non-marital first birth: the role of his and her education

Abstract

A key demographic trend of the past decades has been the increasing share of first births occurring outside marriage. In analyzing factors associated with this, scholars have tended to focus on the characteristics of only one of the parents, typically the mother. This study examines the pathways to parenthood from a couple's perspective, focusing on the role of educational pairings, i.e. the combination of his and her education. By means of a multistate approach, we examine the connection between educational pairings and the occurrence of the first birth inside or outside marriage for 12 European countries. The presence of at least one highly educated partner lowers the rate of non-marital first births relative to first childbearing within marriage. Strikingly, it does not matter whether it is he or she who has the highest level of education.

Keywords: Non-marital childbearing, couple's fertility, educational assortative mating

Introduction

Family behavior has been increasingly characterized by a decoupling of marriage and parenthood and, consequently, by an increasing rate of childbearing within cohabitation (Sobotka and Toulemon 2008; Perelli-Harris et al. 2012). Although changes in family behavior have not occurred everywhere to the same extent and speed, it is possible to underline at least two common features across European countries. First, non-marital childbearing has not spread homogenously: differences between educational subgroups have been detected (Perelli-Harris et al. 2010). This is associated with the fact that new family forms play a key role in the reproduction of social inequalities and in affecting children's well-being in different social strata (McLanahan and Percheski 2008). Second, within Europe, the increase in non-marital childbearing has been largely attributed to the rise of childbearing within cohabiting unions rather than to single-motherhood (Kiernan 2004; Perelli-Harris et al. 2010).

In studies about new family forms, scholars have focused mainly on the relation between the mother's human capital and non-marital childbearing and rarely on the link between human capital and non-marital fatherhood (Perelli-Harris et al. 2010; Carlson et al. 2013). Acknowledging that most non-marital births occur within co-residential unions, the decision to have a child usually involves two persons, i.e. the couple. However, scholars have disregarded the role of partners' educational characteristics as determinant of non-marital childbearing, keeping an individual–female perspective. Only in recent years, the partner's role is increasingly considered in studies as a potential determinant of the transition to parenthood (see e.g., Gustafsson and Worku 2006; Begall 2013; Jalovaara and Miettinen 2013; Nitsche et al. 2015), but empirical evidence on its effects on non-marital family formation is still scarce (Trimarchi, Schnor and Van Bavel, forthcoming).

The couple's perspective is important because the focus on the features of only one partner may lead to a misinterpretation of the results (Gustafsson and Worku 2006). The effects of the characteristics of one partner may to some extent actually reflect the effects of the characteristics of the other partner. Furthermore, considering the role of the partner's education does not only have methodological implications. On a societal level, the way partners combine their human-capital, i.e. the educational pairing of his and her education, also affects the reproduction of inequalities in societies. Educational assortative mating patterns reflect the degree of openness in a society and affect the distribution of resources in

societies (Blossfeld 2009; Schwartz 2009). If men and women mate assortatively according to their socioeconomic status and if both lower educated men and lower educated women tend towards higher rates of cohabitation and unmarried parenthood, we would expect a concentration of these family behaviors among couples with lower socioeconomic resources. This would lead to an exacerbation of social inequalities in societies driven by changes in family forms.

In this paper we aim to fill the gap in the literature on the educational gradient of non-marital childbearing by examining the link between educational pairing and the transition to first child, while distinguishing between couples who got married before the birth of the child and those who did not. How is the combined education of the partners associated with the transition to a first marital or non-marital birth? A cohabiting couple may or may not have already made the transition to parenthood. They may or may not have gotten married yet, and marriage may or may not have occurred before the birth of the first child. We use multistate modeling to investigate which of these pathways a couple has followed and how both his and her education are associated with the trajectory. As we need information about both his and her education, we focus on people who are in a union at the time of the interview (only then do we have information about both him and her).

We look retrospectively to the couples' union status and childbearing history. Couples who split up before the interview, represent cases of left censoring. This implies that we may underestimate non-marital childbearing, since cohabiting couples are more likely to split up (Kiernan 2004), and that hypogamous couples may be underrepresented in our study if they are less stable (as indicated by Jalovaara 2013; Blossfeld 2014; Mäenpää and Jalovaara 2014; but not by Schwartz and Han 2014; Theunis et al. 2015). Nevertheless, our study will yield insight into how the combination of his and her education is associated with marital versus non-marital births for the snapshot of couples living together at the time of the interview.

We used the retrospective fertility and partnership histories for 12 European countries recorded in the Generation and Gender Surveys (GGS) and in the Italian Family and Social Subjects (FSS) survey of 2009. We selected 12 countries which mirror the main family regimes in Europe, providing us insights into contextual variation in the effect of educational pairing on first birth. Our results, obtained by means of a basic illness-death multistate model (Putter, Fiocco and Geskus 2007), show that low human capital in any of the partners is associated with non-marital childbearing. In contrast, the presence of at least one highly educated partner, be it he or she, enhances the rate of marital rather than non-marital

childbearing. This finding is consistent across all the countries considered. In contrast, there is no clear pattern with regard to the transition to a first birth within marriage.

Inequalities, new family forms and the role of educational assortative mating

On a societal level, the diffusion of more liberal family behaviors, such as divorce, cohabitation, the acceptance of abortion, as well as non-marital childbearing, has often been interpreted as an expression of an ideational change in values and attitudes toward the family within the Second Demographic Transition (SDT) framework (Van de Kaa 1987; Surkyn and Lesthaeghe 2004). According to the SDT, both cohabitation and non-marital childbearing are considered, at least in an initial stage, prerogative behaviors of the more secularized individuals, typically the highly educated, as far as those behaviors are believed to be antithetic to traditional family forms and life paths (Surkyn and Lesthaeghe 2004; Lesthaghe 2010).

On the individual level, despite the steep increase in the level of non-marital fertility, marriage remains generally more conducive to childbearing than unmarried cohabitation (Baizan et al. 2003). Partners perceive higher commitment within a marriage (Perelli et al. 2014) and in particular the male partner is considered more committed within a marriage (Lehrer, Grossbard-Shechtman and Leasure 1996). Since married unions tend to be more stable, they tend to have higher fertility than unmarried ones (Lillard and Waite 1993; Lillard et al. 1995; Baizan et al. 2003).

A recent strand of literature emphasizes the lack of socioeconomic resources as determinant in the choice of cohabitation over marriage to form a new family (Perelli-Harris et al. 2010; Perelli-Harris and Gerber 2011). More specifically, for many people, marriage is associated with an expensive wedding ceremony and marriage as a whole requires that the couple is able to secure their long-term economic independence (Kravdal 1999; Salvini and Vignoli 2014). As a consequence, non-marital childbearing is expected to be more prevalent among the least educated. Perelli-Harris and Gerber (2011) called this gradient the "pattern-of-disadvantage". Insofar as marriage is becoming "a province of the most educated" (Goldstein and Kenney 2001:506), the diffusion of cohabitation and non-marital childbearing among the lower educated would exacerbate inequalities in society. Children born to highly educated women would enjoy a growing amount of resources, both in social and economic

terms. Children born to low educated women would face the dissolution of their parents' union more frequently and suffer higher poverty rates (McLanahan 2004; McLanahan and Percheski 2008).

While the pattern of disadvantage framework mainly focuses on women's socioeconomic conditions, Oppenheimer (2003) proposed a theoretical argument based on the relation between men's socioeconomic conditions and the rise of cohabitation. Men with poor and uncertain economic prospects favor cohabitation as the preferable type of union because a low and unstable economic situation may undermine their capabilities to make a strong commitment. This further raises uncertainties about the future of his economic prospects (Oppenheimer 2003).

The theoretical frameworks mentioned so far only look at the human capital of either women or men. More generally, studies on fertility have particularly privileged a female perspective rather than a couple's perspective, even if we know that most children are born to couples. An argument that has been used to justify the focus on just one of the partners is that people often mate with individuals who share similar characteristics (Corijn et al. 1996). The tendency to form homogamous partnerships has indeed been documented for several characteristics, e.g. age, ethnicity, religion, education, etc. (Kalmijn 1991, 1994). People who mate homogamously mostly have the same social background, have followed similar educational paths or have attended the same religious community (Kalmijn 1991; Blossfeld and Timm 2003).

Our focus here is on assortative mating by education, because education may affect individual economic potential and also individual tastes, preferences and lifestyles (Blossfeld 2009). In general, educational homogamy remains the most common mating pattern in Europe (Blossfeld and Timm 2003; Hamplova 2009) but remarkable changes occurred since female educational expansion with regard to heterogamous couples. Recent studies have shown that traditional mating patterns, i.e. unions in which the man is more educated than the woman (hypergamy), are now less common than non-traditional mating pattern, i.e. unions in which the woman is higher educated than the man (hypogamy) (Esteve et al. 2012; Grow and Van Bavel 2015). Even if educational homogamy remains the most common pattern, the shift from hypergamy to hypogamy represents a shift of relative human capital within couples. This shift may have implications for family formation in general and non-marital childbearing in particular.

In the last decades, especially in the United States, several scholars have argued that educational assortative mating varies according to the type of union. One perspective emphasizes the micro-economic approach to the household and the role of specialization within the couple. According to Becker's theory of partner's specialization, a dissimilarity of socioeconomic resources between spouses induces higher gains from marriage because partners increase their interdependence by the division of labor, which may be attached to sex roles (Becker 1991). As a result, since educationally homogamous couples may be less likely to specialize, these couples may be more inclined to live within a more "equal" kind of union such as cohabitation, whereas more specialized couples would have greater gains from a long-term committed union such as marriage (Schoen and Weinick 1993; Brines and Joyner 1999).

An alternative perspective emphasizes cultural aspects of education, considering the match in lifestyles, values, and preferences (Blackwell and Lichter 2000). According to this perspective, mate selection develops as a process characterized by several stages. In this process, cohabitation is seen as the stage where partners' may evaluate each other according to their "cultural matching". As a consequence, unmarried cohabitations, where typically commitment is weaker, may include relatively more heterogamous unions compared to marriages; matches that share more cultural traits will be more likely to make the transition to marriage (Blackwell and Lichter 2000; Saarela and Finnäs 2014).

Previous findings

Educational differences with regard to cohabitation and non-marital fertility differ over time and context (Perelli-Harris and Sanchez-Gassen 2012, Ní Bhrolcháin and Beaujouan 2013). This diversity has motivated cross-national comparisons. Perelli-Harris et al. (2010) found that in Austria, France, the Netherlands, Norway, Russia, United Kingdom and Western Germany, the negative educational gradient in the transition to first birth for women was steeper for non-marital births compared to marital births, supporting the "pattern of disadvantage" framework. In Italy, the educational gradient of the first non-marital birth compared to the first marital birth was U-shaped. The authors related these findings to the low prevalence of cohabitation and argued that in contexts where non-marital childbearing is just emerging, as in Italy, it is more prevalent among both low and highly educated women than among the group in between. In contrast, the low educated are more likely to have a non-marital child than all the other groups if cohabitation is common. In France, the link between education and non-marital childbearing has changed over time: highly educated women drove the increase in non-marital childbearing during the 1970s and 1980s; from around the start of

the 21st century, the positive effect of education has disappeared (Perelli-Harris et al. 2010). In Hungary, the diffusion of non-marital childbearing did not follow a top-down pattern, rather bottom-up, given that the frequency of childbearing in cohabitation was lower among the higher levels of education, although highly educated individuals played a crucial role in the spread of cohabitation (Speder and Kamaras 2008: 629). A similar pattern has been observed in Czech Republic (Sobotka et al. 2008). Carlson et al. (2013) showed that the pattern of disadvantage is also applicable to men/fathers. The authors found that, in the United States, non-marital fatherhood is negatively associated with education: the higher the level of education, the lower the risk of having a child outside marriage.

All the studies mentioned so far mainly focus on the characteristics of one partner. Several studies have analyzed the transition to parenthood from a couple's perspective, including both partners' educational level (e.g. Corijn et al. 1996; Thomson 1997; Gustafsson and Worku 2006; Vignoli et al. 2012; Jalovaara and Miettinen 2013; Begall 2013). None of these studies, however, specifically addressed the difference in the risk of marital and non-marital birth.

From a couple's perspective, Trimarchi et al. (forthcoming) found that the presence of at least one highly educated partner decreases the risk of non-marital childbearing relative to marital childbearing in Austria (cohorts 1970-1983) and Eastern Germany (cohorts 1971-1973 and 1981-1983). In Western Germany, instead, the authors found that the couples where the man is more educated than the woman are less likely to have a non-marital relative to marital compared to other groups of educational pairings. Overall, the results showed the importance of considering the combination of the educational level of both partners when studying non-marital childbearing and the role of different contexts. In Finland, Saarela and Finnäs (2014) found that heterogamous couples have a higher risk of union dissolution, a higher risk of living in an unmarried union and a lower risk of becoming parents compared to the homogamous couples. Moreover, they found family formation within marriage to be more typical of the highly educated, whereas unmarried family formation is more common among the lower educated (Saarela and Finnäs 2014). These results strongly points towards the fact that an interaction between homogamy and the level of education affects family formation behavior of couples, highlighting the importance of a couple's perspective approach to fertility.

Research hypotheses

Based on theoretical arguments and previous findings, we formulate three main hypotheses. *Hypothesis 1* relies on the socioeconomic argument according to which more education ensues a greater availability of resources to get married. From this general statement we derive two sub-hypotheses which are transition-specific. *Hypothesis 1a* contends that there is a positive educational gradient with regard to the transition from cohabitation to marriage. *Hypothesis 1b* concerns the transition from cohabitation to parenthood: unmarried couples with lower human capital are expected to have higher birth rates than couples with more human capital. The presence of at least one highly educated partner should, according to this argument, reduce the risk of a non-marital birth.

Hypothesis 2 focuses on the behavior of the heterogamous couples. In general, we expect that hypergamous couples (he has more education than her) are more inclined to traditional family behaviors, while the hypogamous couples (she has more education) are more prone to less conventional family behaviors, especially in countries with traditional gender roles expectations (i.c. Italy and Poland). This expectation stems from the Beckerian assumption that unions with an education imbalance in favor of the male partner lead to a gendered division of labor which generate higher gains from marriage for both partners. This hypothesis may be reinforced by socioeconomic arguments according to which, given the same level of education, men may have a higher earning potential than women. In particular, *hypothesis 2a* concerns the transition from cohabitation to marriage: we expect that hypergamous couples have a higher rate of marriage compared to hypogamous couples. As a complement, we expect that hypergamous couples are more inclined to have a first child within marriage compared to hypogamous couples (*hypothesis 2b*).

Hypothesis 3 is based on the argument that homogamous partners tend to have similar beliefs and backgrounds, which would lead to strengthen their commitment through marriage (i.e. "cultural matching"). We expect, then, that homogamous partners have a higher transition rate from cohabitation to marriage compared to the heterogamous couples.

Data and methods

We used Generation and Gender Survey (GGS) data for 11 European countries (Austria, Belgium, Bulgaria, Czech Republic, Estonia, France, Hungary, Lithuania, Poland, Norway, Romania) and the Family and Social Subjects (FSS) 2009 for Italy. For the GGS countries the information is derived from both male and female respondents, whereas for Italy we could use

only female respondents. To acquire information on both partners' characteristics, we selected only individuals who are in a union at the time of interview. We focused on cohorts for which the respondents and their partners are born after 1950. The focus is the transition to parenthood, thus we selected couples in which the woman was 15-45 years old at the beginning of the co-residential union and we excluded cases in which one of the partners had a child before in another relationship (overall we have 48344 couples). Appendix 4.A details the number of cases that were and were not selected in our analytical sample for various reasons.

The main explanatory variable: educational pairings

Given the importance of the concept of assortative mating, social scientists have invested considerable effort in its measurement. On the macro level, scholars have been interested in measuring the propensity to marry partners of given characteristics using measures of attraction which also account for the pool of potential mates (Schoen 1981). For studies whose focus is on the micro level, on education in particular, the main concern has been how to include the best indicator which could account both for the effect of education and the effect of educational differences between partners (Eeckhout et al. 2012).

Since the focus of this paper is on a micro-level, in line with previous studies on the effect of educational assortative mating on demographic behavior (see e.g. Mäenpää and Jalovaara 2014), we have defined our main explanatory variable as the combined educational attainment of the partners. Collapsing categories from the international standard classification of education (ISCED 1997), we grouped individuals into three levels of attainment: low, medium and high. The first group includes those who completed primary plus lower secondary school (at least 8 years of schooling, ISCED 0, 1, 2). The medium category consists of individuals who attained the upper-secondary and those who also got a post-secondary level (ISCED 3, 4). Finally, respondents and their partners were defined highly educated if they got a bachelor/master/PhD degree (ISCED 5, 6).

In our model we used a compound measure of educational assortative mating which consists of three categories for couples where men and women have the same educational attainment, i.e. homogamous couples ("both low" (1); "both medium" (2), "both high" (3)); two categories for hypergamy (couples in which man is highly educated and the woman medium or low educated (4) and couples in which men are medium educated and women low educated (5)); two categories for hypogamy (couples in which the woman is highly educated and the man medium or low educated (6) and couples in which women are medium educated

and men low educated (7)). A separate category is assigned in case of missing educational information for one of the partners.

Table 4.1 shows the distribution of the educational assortative mating variable - as it has been employed in the models. Homogamous couples represent more than half of the couples in all countries. The majority of couples consisted of both medium educated partners, with the exception of Belgium and Italy. In Belgium, most couples are homogamously highly educated (32%), whereas in Italy the majority are homogamously low educated couples (30%). Even if the most typical mating pattern is homogamy, it is interesting to look at the distribution of heterogamous couples. As we can see in Table 4.1, in many countries, couples in which the woman is more educated than the man are more common than more traditional combinations, i.e. where the man is more educated than his partner. This is line with recent trends of educational assortative mating which have been found across European and non-European countries (Esteve et al. 2012; Grow and Van Bavel 2015).

Control variables

We included the age difference between partners in our models because it is an important determinant of couple's fertility (Ní Bhrolcháin 1992; Bozon 1991). It is operationalized in five categories: age difference is 0 or 1 (considered as age homogamy); the woman is older than the man; the man is 2 to 4 years older than the woman; the man is 5 years or more older than the woman; and a missing category if the age difference between partners is not available. We also control for the respondent's sex; the woman's age at union formation and its square to control for non-linearities; the union's cohort in four categories: 1967-1979 (1); 1980-1989 (2); 1990-1999 (3); 2000-2010 (4). We added a control only for the union order of the respondent, since the union order of the partner is unavailable. Finally, we added a variable which specifies whether a conception occurred before marriage.

Table 4.2 shows the distribution of couples by country, according to their marital status at the time of co-residential union. The difference in the institutionalization of cohabitation and its diffusion across Europe shows up in a very simple way in Table 4.2. In countries where cohabitation has typically spread much slower and/or does not have a legal status yet, the majority of couples start co-residing directly by marrying. This holds for the Central-Eastern European countries (i.e. Poland, Lithuania, Hungary, Romania and, to a lesser extent, Czech Republic) and Italy. In Austria, Belgium, Bulgaria, Estonia, France and Norway, instead, the majority of partners start to co-reside as an unmarried couple and eventually marry.

Table 4.1 Descriptive statistics by country

	Austria	Belgium	Bulgaria	Czech Republic	Estonia	France	Hungary	Italy	Lithuania	Norway	Poland	Romania
Sex (%)												
Male	38	48.03	41.36	47.96	38.66	43.98	44.69		55.56	49.49	45.41	52.83
Female	62	51.97	58.64	52.04	61.34	56.02	55.31	100	44.44	50.51	54.59	47.17
Union's cohort (%)												
1967-1979	0.08	16.12	13.46	15.95	17.77	16.47	22.08	13.21	13.76	13.84	18.66	19.33
1980-1989	18.47	26.38	36.39	28.95	31.51	27.61	29.32	28.65	31.63	26.89	24.60	33.49
1990-1999	41.29	28.43	37.05	30.54	33.08	35.78	30.67	30.11	29.91	33.76	24.91	34.74
2000-2010	40.15	29.07	13.10	24.56	17.64	20.15	17.93	28.02	24.69	25.50	31.83	12.44
Educational pairings (%)												
Low homogamous	3.51	11.09	13.6	2.87	2.71	8.17	6.03	30.15	2.83	2.57	3.07	13.27
Med homogamous	52.62	17.07	44.35	62.2	42.3	28.45	53.43	25.06	49.39	22.04	54.5	50.88
High homogamous	10.95	32.25	14.13	7.92	14.85	23.31	11.14	6.79	16.19	26.04	14.94	8.71
He high She lower	13.52	8.29	3.6	9.7	7.83	7.59	5.71	4.54	8.6	8.28	4.81	4.39
He medium She low	8.28	7.19	5.51	4.77	4.23	9.85	9.51	10.62	2.83	7.45	4.71	16.1
He lower She high	7.82	14.46	13.04	5.24	21.02	13.85	10.12	8.51	13.97	16.75	12.6	2.95
He low She medium	8.3	7.95	5.59	5.08	7.06	8.17	4.06	14.32	6.14	5.52	4.67	3.71
Not available		1.7	0.2	2.21	0.00	0.61	0.00	0.00	0.06	11.35	0.69	0.00
Respondent union's order (%)												
First union	84.40	70.17	98.75	94.68	92.94	88.54	88.58	93.55	97.85	82.65	98.19	98.49
Higher order	15.60	29.83	1.25	5.32	7.06	11.46	11.42	2.11	2.15	17.35	1.81	1.51
Not available								4.35				
Age difference (%)												
Age homogamy (or <= 1 year)	22.15	28.12	20.14	23.32	27.24	26.48	20.31	25.24	25.58	25.36	25.82	19.81
Woman older 2+	12.38	12.15	6.80	7.22	12.65	13.66	10.14	7.24	10.60	11.75	10.59	8.23
Man older 2-4	37.74	36.90	38.84	42.18	34.77	37.04	39.41	36.55	43.98	38.45	39.56	36.72
Man older 5+	27.73	22.37	33.83	27.09	25.34	22.83	29.97	30.97	19.81	24.24	24.03	35.24
Not available	0.00	0.45	0.40	0.19	0.00	0.00	0.18	0.00	0.03	0.21	0.00	0.00
Median Woman Age at union (years)	22	23	20	22	21	22	21	24	22	23	22	21
Median time in union till interview (years)	11.08	16.33	14.91	13.83	14.91	14.33	15.33	17.25	15.54	14.91	18.08	16.05
N events by transition												
Cohabitation to Marriage	974	740	2615	671	787	1238	564	536	580	1570	1141	654
Cohabitation to Kid	608	399	553	175	561	764	251	323	145	1633	390	270
Marriage to Kid	1139	1759	4037	1814	1434	1761	2848	5069	2582	2348	6144	3731
N respondents	2366	2642	5031	2577	2364	3097	3994	6213	3256	4819	7402	4583

Source: authors' calculations on Generations and Gender Surveys and the Italian Family and Social Subjects (2009) samples.

Table 4.2 Distribution of couples by country and marital status at the time of union formation

Country	Cohabitation first		Direct marriage		Total	
	(N)	(%)	(N)	(%)	(N)	(%)
Austria	1988	84.02	378	15.98	2366	100
Belgium	1383	52.35	1259	47.65	2642	100
Bulgaria	3363	66.85	1668	33.15	5031	100
Czech Republic	1139	44.20	1438	55.80	2577	100
Estonia	1610	68.10	754	31.90	2364	100
France	2354	76.01	743	23.99	3097	100
Hungary	1224	30.65	2770	69.35	3994	100
Italy	1034	16.64	5179	83.36	6213	100
Lithuania	996	30.59	2260	69.41	3256	100
Norway	3808	79.02	1011	20.98	4819	100
Poland	1796	24.26	5606	75.74	7402	100
Romania	1008	21.99	3575	78.01	4583	100
Total	21703	44.89	26641	55.11	48344	100

Source: Authors' calculations on Generations and Gender Surveys and the Italian Family and Social Subjects (2009) samples.

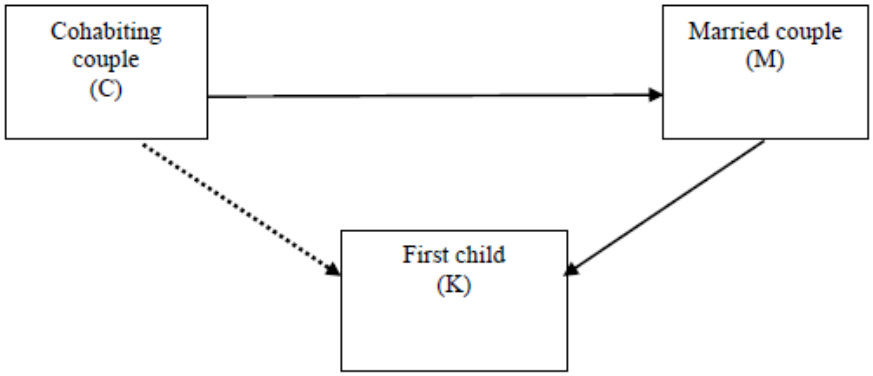
Analytical strategy

We applied multistate models to test our hypotheses about the effect of educational parings on the chosen pathway of first birth. The multistate approach can account for possible changes in union status of the couples since they started to cohabit till the interview date. Since we observe only the period during which partners are in a union, single-status is not in our framework, and couples who separated before the survey date were left-censored. We selected couples that were intact at the time of the interview and looked retrospectively at their changes in union status leading to the first shared birth, if it occurred. Unions that survived until the time of the interview may on average be more stable than the total population of couples ever formed. Obviously, unions formed during the years closer to the interview may be much more heterogeneous with regard to their stability (as they were not at risk yet to split up). To check how strongly this affected our results, we ran analyses only for younger cohorts and found that our conclusions remained the same.

In this setup, our main event of interest is the birth of the first child, which represents the absorbing state in multistate terminology (Putter et al. 2007; Willekens 2014). Figure 4.1 shows all the possible transitions within our analytical state-space. At the start of the co-residential union, partners may cohabit (top left in Figure 4.1) or be married (top right). After marriage, couples are at risk of only one transition, i.e. transition to parenthood. Couples who started co-residence as an unmarried couple were at risk of two possible pathways. First, they

may have gotten married and gotten a child afterwards (Figure 4.1 – solid line). Second, they may have a child within cohabitation (Figure 4.1 – dashed line). In the last case a separate analysis will be carried out to check which kind of couples will eventually marry after a non-marital birth. This model assumes a Markov process, implying that the pathway of a couple and its timing will depend only on the present state and not on the event history of the couple.

Figure 4.1 State-space considered and possible transitions.



Once we have all the transition dates, we expand the dataset for each possible transition that the couple may experience, defining the entry into and the exit from that state (or the end of the observational period) and a status variable which defines if the transition has occurred or not. As in Putter et al. (2007), to estimate the model, we apply a Cox's proportional hazard model for each transition (i.e. stratified hazard model), separately country by country. Formally, the hazard for transition *i* to *j* for a couple with a covariate vector Z will be:

$$\lambda_{ij}(t|\boldsymbol{Z}) = \lambda_{ij,0(t)}\exp(\beta_{ij}^{T}\boldsymbol{Z})$$

Where $\lambda_{ij,0(t)}$ is the baseline hazard of transition i to j which is not parametrically specified, and β_{ij} are the regression coefficients which describe the effect of the covariate-profile of each couple. All models have been estimated by using the package *mstate* implemented in the R software (De Wreede, Fiocco and Putter 2011).

Results

Figures 4.2, 4.3 and 4.4 show the main results relative to the effect of educational pairing for all the transitions considered (Appendix 4.B gives all the model estimates). Each of these figures consists of a grid of panels, with columns representing her educational attainment and rows representing his educational attainment, so that homogamous unions are on the diagonal

of each figure. The reference category across all panels are medium educated homogamous couples.

Figure 4.2 displays the hazard ratios for the transition from cohabitation to marriage. When focusing on the diagonal, we find that in countries where the difference is significant, low educated homogamous couples have a lower transition rate from cohabitation to marriage compared to the reference category of medium educated homogamous couples. Austria is a striking exception: low educated homogamous couples are found to have almost 2.5 times higher transition rate to marriage compared to the medium homogamous couples. Additional inspection of the data revealed that this is related to the fact that migrant populations, who are typically more traditional with regard to the type of union, are strongly represented among the low educated, which also supports previous findings about Austria (Berghammer, Fliegenschnee and Schmidt 2014).

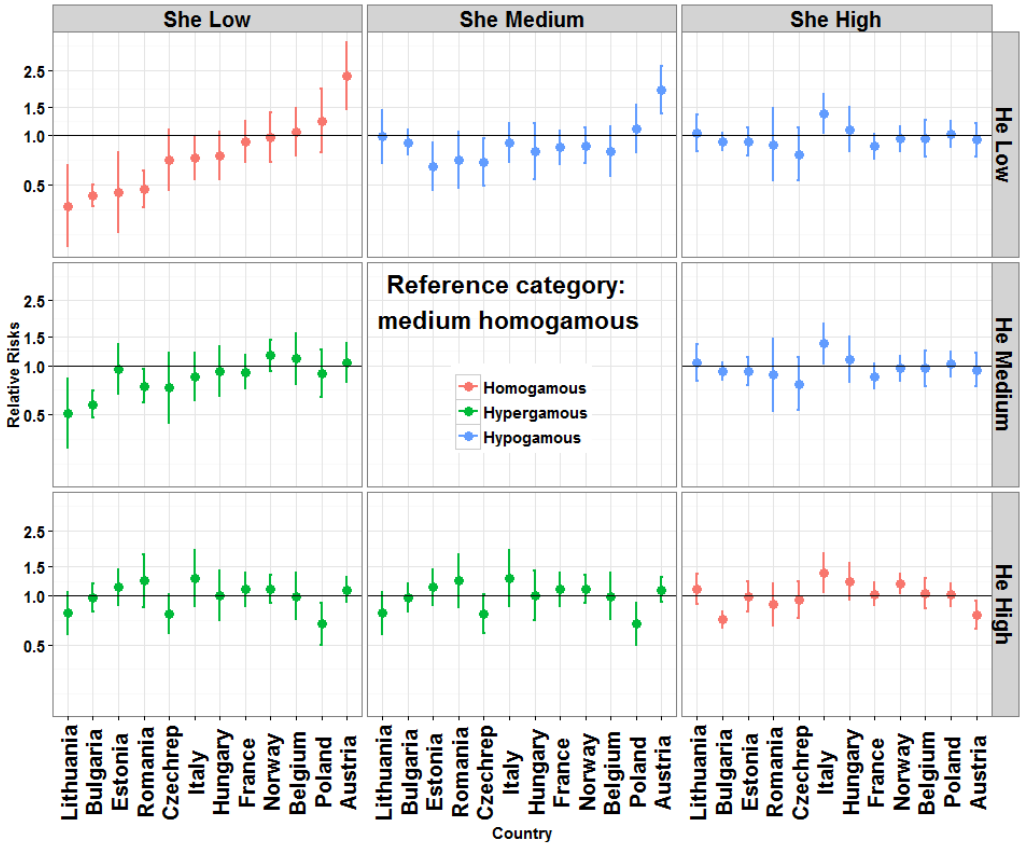
The heterogamous couples, represented above and below the diagonal, generally tend not to be statistically different from the medium homogamous couples. However, when switching the reference category to the low educated homogamous couples, we notice that the heterogamous couples with at least one highly educated partner tend to have higher rates of marriage than low educated homogamous couples (see Appendix 4.C – Table 4.C1 for all the pairwise contrasts). This difference holds for Bulgaria, Estonia, Italy, Lithuania and Romania, and it is in line with our expectations derived from the socioeconomic hypothesis *1a*.

In general, the results for the transition from cohabitation to marriage support the socioeconomic argument of the first hypothesis (*1a*), whereas we did not find evidence that lends support to the second hypothesis (*2a*). Moreover, there is no evidence for the third hypothesis which is based on the role of homogamy and heterogamy. After testing all the contrasts, for all levels of education, between homogamous couples and heterogamous couples (see Figure 4.2 and Appendix 4.C – Table 4.C1), we found no significantly different transition rates from cohabitation to marriage. Basically, we find no empirical evidence for an effect of homogamy (or heterogamy), itself detached from the role of the level of education.

Still, we should highlight that beyond Austria, two more countries deviate from this general pattern. First, in Bulgaria, highly educated homogamous couples have a lower transition rate to marriage compared to the medium homogamous and the heterogamous couples. It remains unclear why the presence of only one highly educated partner enhances the transition to marriage more than if the couple would be composed of two highly educated partners.

Second, Poland also represents a puzzling exception. Here, couples in which the man is highly educated and the woman is lower educated, have a lower transition rate to marriage compared to all the homogamous and the hypogamous educational pairings. Among the countries considered, Poland represents a traditional context, where the diffusion of cohabitation has been relatively slow and the male-breadwinner model persists as main family model especially after the birth of the first child (Matysiak 2005; Kotowska et al. 2008). This result, however, contrasts with our expectations according to which, especially in traditional contexts, hypergamous couples are more prone to marriage than hypogamous ones (hypothesis *2a*).

Figure 4.2 Hazard ratios for the transition from cohabitation to marriage

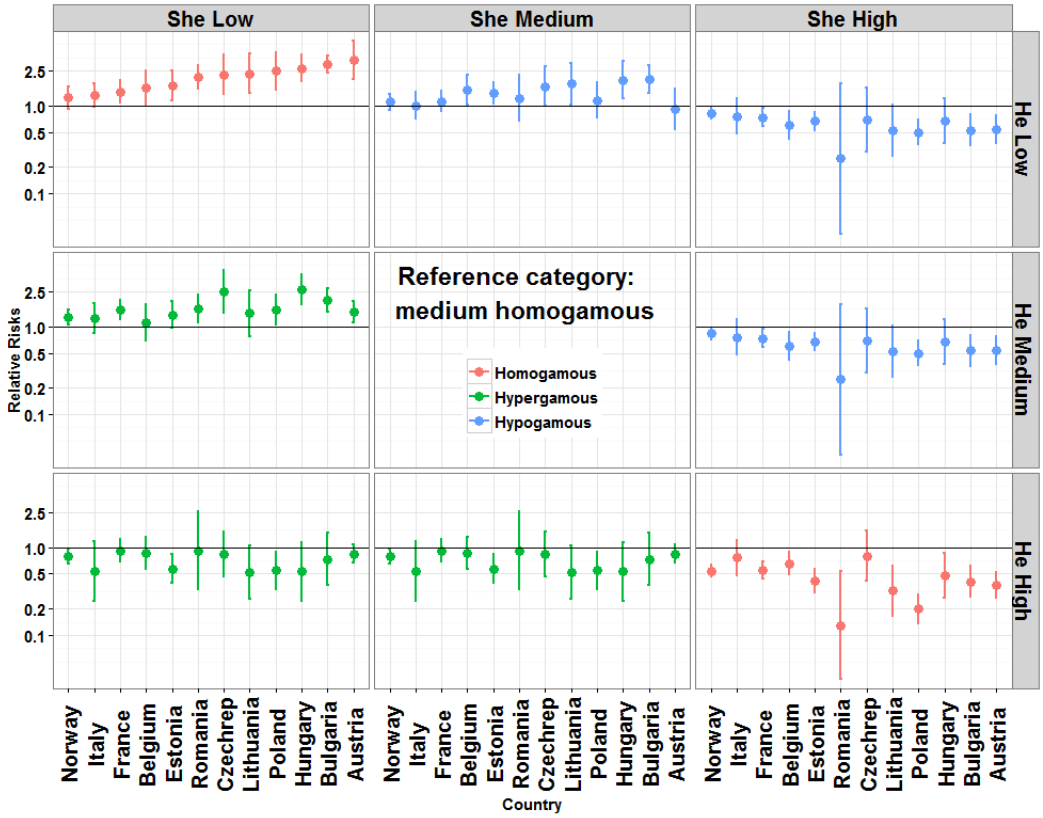


Source: Models' estimates (see Appendix 4.B, Table 4.B1), GGS and Italian FSS 2009

Next, Figure 4.3 shows hazard ratios for the transition from cohabitation to first birth. In all countries, low educated homogamous couples have higher non-marital birth rates compared to medium educated couples, whereas highly educated unmarried couples exhibit lower rates (diagonal Figure 4.3). In general, there are no statistically significant differences

between heterogamous couples and the reference category (medium educated homogamous couples). Changing our reference category to highly or low educated homogamous couples, the results strongly support the socioeconomic resource argument, i.e. hypothesis *1b* (see Appendix 4.C – Table 4.C2 for all the pairwise contrasts). As the overall human-capital of the couple increases, the risk of non-marital family formation decreases in basically all countries. This is striking because it implies that there is no difference in family formation behavior depending on whether it is the woman or the man who is the partner with more education. In both cases, the estimates point in the same direction.

Figure 4.3 Hazard ratios for the transition from cohabitation to first birth

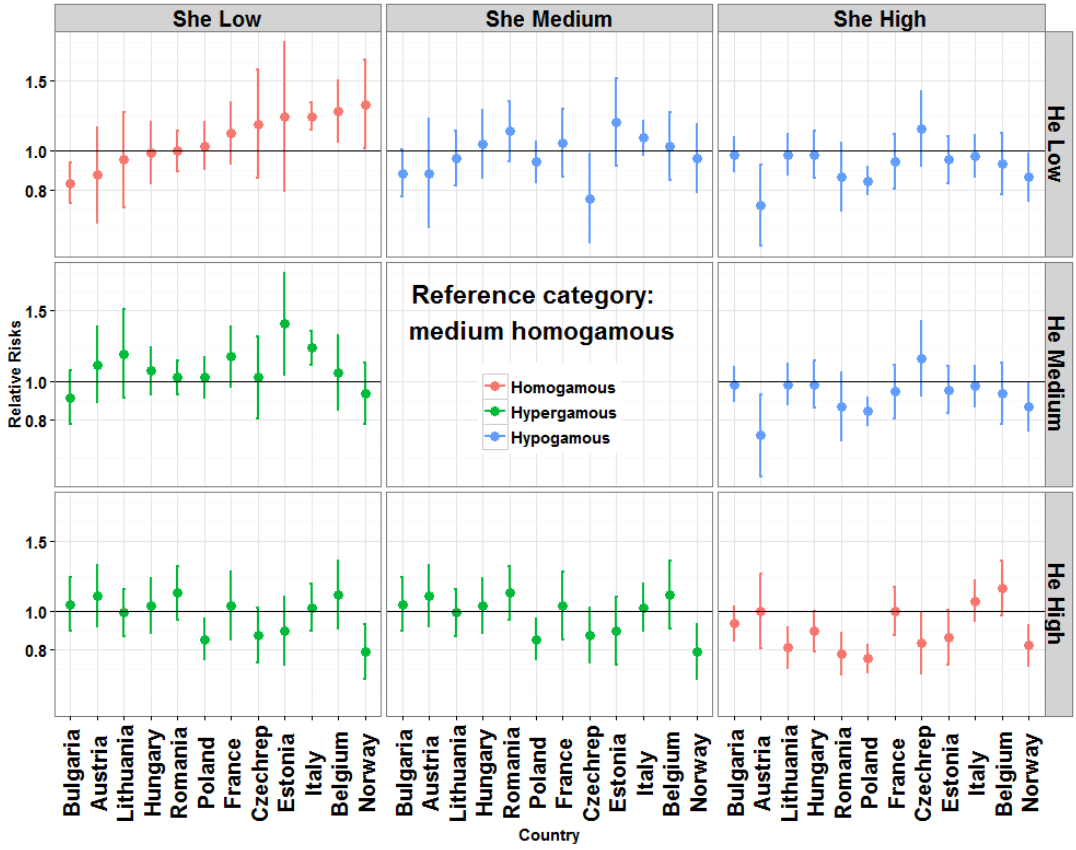


Source: Models' estimates (see Appendix 4.B, Table 4.B2), GGS and Italian FSS 2009

Figure 4.4 shows the hazard ratios for the transition to parenthood after marriage. Here, we do not observe such a clear pattern as the one observed for the transition to a non-marital birth. The only exception is Norway, where the pattern found for the transition to a marital birth resembles almost exactly the one found for the transition to a non-marital birth. Moreover, in Italy, similar to Norway, low educated homogamous couples have the highest marital birth rates compared to all the other educational pairings. In Italy, such a gradient is

much stronger than the one found for the non-marital birth. These results are in line with previous findings according to which, in Italy, highly educated women have been found to have higher relative risk of first birth within cohabitation relative to marriage compared to medium educated women (Perelli-Harris et al. 2010). In Bulgaria, in contrast, low educated homogamous couples tend to have lower marital birth rates compared to the medium educated homogamous couples and the heterogamous couples with at least one highly educated partner (see Appendix 4.C – Table 4.C3 for all the pairwise contrasts). In Austria and Romania, hypergamous couples, where men are highly educated, have a higher marital childbearing rate than hypogamous couples, where women are highly educated. Meanwhile there is no statistically significant difference between hypergamous and hypogamous couples, where the partner with the highest level of education is medium educated. These results provide evidence for hypothesis *2b*, according to which couples where the man is more educated than the woman are more prone to marital childbearing compared to couples where the woman is more educated than the man. Moreover, comparing patterns in the transition to parenthood in marriage and unmarried cohabitation, we notice that in Austria hypogamous couples with a highly educated woman had significantly lower birth rates overall compared to hypergamous couples formed by a man who is highly educated. This implies that, at least in Austria, where the male-breadwinner model has remained relatively strong (Prskawetz et al. 2008), hypogamous couples are not conducive to childbearing, irrespective of whether the couple is married or not.

Figure 4.4 Hazard ratios for the transition from marriage to first birth



Source: Models' estimates (see Appendix 4.B, Table 4.B3), GGS and Italian FSS 2009

We briefly discuss the effects of two additional couple level variables, namely the effect of the union's cohort and the age difference between partners. As expected, across European countries unions formed most recently between 2000-2010 had a lower transition rate to marriage compared to unions formed in the 1990s (our reference category). On the other hand, unions formed in the 1970s and '80s had a higher transition rate from cohabitation to marriage compared to the reference category. This cohort-effect is probably due to the fact that, *ceteris paribus*, unmarried cohabitation becomes over time more socially accepted and individuals tend to spend more time as an unmarried couple, feeling less the pressure to get married. We ran the same models by censoring the observation time after 5 or 10 years since co-residential union and the results were robust. Next, we did not find a strong effect with regard to the age difference between partners. Also in other contexts the age difference between partners with regard to fertility within cohabiting unions was not found to be significant (cf. Wu 1996). The age difference between partners mattered the most for the transition from cohabitation to marriage: where the effect was significant, more traditional types of couples, i.e. those where he is older than her, tend to have a higher transition rate to

marriage than couples where partners have a similar age. Such a finding is in line with the hypothesis that more traditional couples are more prone to marriage compared to other pairings, i.e. *hypothesis 2a*. However, this holds only for the transition from cohabitation to marriage, when it comes to childbearing, the effect of age difference is not significant.

Discussion: the beaten path to parenthood

In this study, we examined whether and how the educational pairing, i.e. how his and her education combine, affects the likelihood of first birth within marriage and cohabitation in twelve European countries. We observed couples who are in a co-residential union and examined their pathways to parenthood by means of multistate modeling.

Overall, we found most support for our general first hypothesis, according to which a higher level of human capital is associated with a lower likelihood of non-marital family formation. This hypothesis is based on the argument that educational resources, used as proxies for long-term good economic prospects, are perceived as prerequisites to marry. Our results show that couples with lower human capital tend to stay longer in an unmarried relationship compared to their counterparts with higher human capital (hypothesis *1a*). Couples with lower human capital also tend to have a higher transition rate to a non-marital first birth in most of the countries considered. The presence of at least one highly educated partner, independently of whether it is he or she, inhibits the rate of a non-marital first birth (hypothesis *1b*). Moreover, additional analyses suggested that more education is positively associated with marriage rates even after having a first non-marital child (results not shown). Hence, what has been called the "pattern of disadvantage" framework, which usually refers to non-marital childbearing, finds support in our study. The more educated partners do not necessarily avoid cohabitation altogether, but they are more likely to get married once they expect to have a child, or after having a child already. For European countries, similarly to United States, our results highlight that the diffusion of non-marital childbearing among lower social strata may envisage a widening of social inequalities. Future studies could focus on children's well-being to assess whether and to what extent a lack of human capital among unmarried parents translates in disadvantages for the children.

Next, we did not find evidence supporting our general second hypothesis, which focuses on the difference in the effect of his versus her education. Based on the Beckerian specialization model, we hypothesized that hypergamous couples are more inclined to marital family forms compared to hypogamous couples for at least two reasons. First, couples where

he has more education than her may reinforce traditional behaviors driven by the imbalance of socioeconomic resources in favor of the man. Second, they may be more economically advantaged by the fact that, *ceteris paribus*, men earn on average more than women. Our results show that in most countries there is no statistically significant difference in the pathways to the first birth between hypergamous and hypogamous couples. Poland represents an exception: hypergamous couples composed of a highly educated man have a lower transition rate to marriage compared to the hypogamous couples and all the other homogamous educational pairings, which is in contrast with hypothesis *2a*. Other studies focusing on Poland showed that couples in unmarried cohabitation are typical of unemployed people or people still enrolled in education who are supported economically by their parents (Kotowska et al. 2008; Matysiak 2009). This plausibly also explains our findings, since additional data-inspections revealed that those couples were formed mostly by young people who have not completed their education yet by the time they start their co-residence.

Furthermore, in line with previous findings, we did not find support for our third hypothesis about the role of homogamy, on top of the role of each partners' level of education. The behavior of educationally homogamous couples, either unmarried or married, is not statistically different from that of educationally heterogamous couples. Rather, the behavior in family formation depends on the overall human capital of the couple. Bulgaria is an interesting exception to this pattern: we found that couples where partners have different levels of education get married earlier compared to the highly educated homogamous couples who, instead, are less likely to marry. This result contrasts both with our first (*1a*) and third hypotheses. It contrasts our hypothesis *1a* because we expected that a higher level of human capital would enhance the transition to marriage and this is not the case in Bulgaria. Furthermore, it contrasts our third hypothesis which is about the role of homogamy in marriage. According to the third hypothesis, homogamous couples are more inclined to marry compared to the heterogamous ones (cf. Blackwell and Lichter 2000). In Bulgaria, our findings indicate that the heterogamous couples with at least one highly educated partner are more inclined to marry, instead. We can speculate that this occurs because of the advantages derived from a specialization model à la Becker, characterized by unequal but complementary socioeconomic resources within the couples, not attached to traditional gender roles in this case (Becker 1991; Schoen and Weinick 1993; Brines and Joyner 1999).

Marriage, however, is not the only way to express commitment. Family formation processes also include the transition to parenthood, which can be read as an alternative,

perhaps even stronger way to commit to a partner. If heterogamy inhibits marriage, consequently, cohabitation and non-marital childbearing would be more diffused among the heterogamous couples. Still, a child born within cohabitation may be considered a strong commitment between partners. In our study we could not disentangle the two arguments based on whether commitment is manifested via marriage or via childbearing, since in our sample the more stable couples, i.e. where childbearing is more likely, are overrepresented. In fact, it is worth reminding that to answer our research question we limited our study to people who were in a union at the time of interview. By applying a multi-state framework, we could account for the selective exit from cohabitation via marriage of "surviving" unions, but we could not empirically test the role of divorce or separation. In the future, it would be interesting to examine how educational assortative mating varies across union type and its interactions between union dissolution and childbearing. A previous study from Finland, which focused on *cohabiting* unions formed between 1995-2002, found that unions where the woman is more educated than the man were more likely to dissolve (Mäenpää and Jalovaara 2014). However, other studies showed that this may not hold for *marital* unions formed after the 1990s (cf. Schwartz and Han 2014 for the United States; Theunis et al. 2015 for Belgium). It could be that we underestimated the differential role of partners' education in our study, which has been cancelled out by considering mainly couples where childbearing is more likely. Our results point out that, among the more stable unions, the difference in partners' education rarely plays a role in the choice between marital or non-marital birth, rather it is the overall level of education that matters. Future studies should test if accounting for the selective exit from cohabitation or marriage via union dissolution affects the role of educational pairings on fertility behavior. This could be achieved by using longitudinal country-specific data, which have detailed information on the time of partnerships' formation and dissolution.

It is also possible that we were unable to grasp the role of educational heterogamy because of measurement issues. Since heterogamy is less common than homogamy, we could not consider all the possible pairings of partners' education due to small categories. By using a compound measure of educational pairing, which does not consider all the possible combinations, we may have overlooked the role of heterogamy. The absence of a statistically significant effect of heterogamy could be due to large standard errors. An obvious solution could be to use larger datasets. Alternatively, a diagonal reference model, which is a more parsimonious and interpretable approach to analyze dyads, may be an option (cf. Eeckhout et

al. 2012), but diagonal reference models have not been implemented yet in combination with survival analysis. Measurement issues may be linked to another aspect: we could not include a time-varying covariate of educational pairing because of lack of information. Our results may suffer from anticipatory bias, since partners may have acquired their highest level of education after they start to co-reside. The use of more detailed data, which includes the full educational history of both partners, could help in avoiding anticipatory bias when applying event history analysis (Hoem and Kreyenfeld 2006).

Overall, our study showed that it is important to also consider the male partner's education since it can counterbalance the effect of women's education. Still, in order to uncover the mechanisms which link the mate selection processes to fertility, the challenge to integrate micro and macro level studies remains. As some authors pointed out, non-marital childbearing may be associated with changes in education-specific mating markets (Harknett 2008; Van Bavel 2012). The difficulties in finding a suitable partner, especially for the low educated persons who may be considered less attractive on the mating market, can push people to settle for a less committed partnership without renouncing childbearing. As a result, the study of contextual factors such as mating markets can also play a role in the distribution of non-marital childbearing among social strata.

Appendices

Appendix 4.A

Table 4.A1 Sample selection

	GGS countries	FSS Italy
Initial sample size	123390	4385 0
Not in a union time of interview	44874	2234 1
Same sex couples	232	//
Not born > 1950 (and for Italy being younger than 18 at time of interview) for the respondent	22666	7623
Not born > 1950 (and for Italy being younger than 18 at time of interview) for the respondent's partner	2832	1017
Children from previous relationships	6861	264
Date union missing	928	//
Date birth missing	67	//
Date birth <= 0	2167	281
Woman's age missing or not in interval 15-45	457	82
Man's age union formation < 15	3	//
Date marriage missing	170	//
Respondent's age missing	1	//
Reported date of events after interview date	1	1
Male respondent (only Italy)	//	6028
Final N	42131	6213

Appendix 4.B

Table 4.B1 Cox regressions coefficients for the transition from cohabitation to marriage

Transition from cohabitation to marriage	**AT**	**BE**	**BG**	**CZ**	**EE**	**FR**	**HU**	**IT**	**LT**	**NO**	**PL**	**RO**
Sex(ref. Male) Female	-0.03	-0.11	0.05	0.03	-0.09	-0.11	-0.17		0.05	0.04	-0.004	0.01
	(0.07)	(0.07)	(0.04)	(0.08)	(0.08)	(0.06)	(0.09)		(0.08)	(0.05)	(0.06)	(0.08)
Woman's age at union	0.30***	0.05	0.32***	0.23**	0.33***	0.44***	0.24**	0.09	0.40***	0.36***	0.46***	0.20**
	(0.06)	(0.07)	(0.05)	(0.08)	(0.09)	(0.07)	(0.08)	(0.07)	(0.10)	(0.06)	(0.07)	(0.08)
Woman age at union (squared)	-0.004***	-0.001	-0.01***	-0.004**	-0.01***	-0.01***	-0.005**	-0.002	-0.01***	-0.01***	-0.01***	-0.004*
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Union's cohort (ref. 1990-1999)												
1967-1979	0.88	0.92***	0.63***	0.74***	1.12***	1.03***	0.89***	0.58**	0.37*	1.12***	0.45***	0.23
	(1.02)	(0.16)	(0.06)	(0.14)	(0.11)	(0.10)	(0.19)	(0.22)	(0.16)	(0.08)	(0.13)	(0.13)
1980-1989	0.46***	0.27**	0.56***	0.56***	0.84***	0.38***	0.51***	-0.04	0.39***	0.49***	0.19	0.15
	(0.09)	(0.10)	(0.05)	(0.10)	(0.09)	(0.07)	(0.10)	(0.15)	(0.11)	(0.06)	(0.11)	(0.10)
2000-2010	-0.24**	-0.58***	-0.64***	-0.55***	-0.32*	-0.31**	-0.61***	-0.01	-0.84***	-0.30***	-0.45***	-0.43***
	(0.08)	(0.09)	(0.07)	(0.11)	(0.13)	(0.10)	(0.13)	(0.10)	(0.11)	(0.09)	(0.08)	(0.12)
Respondent's union order (ref. 1st union) Higher order unions	-0.40***	-0.42***	-1.08***	-0.43*	-0.05	-0.35***	-0.22*	-0.11	-0.79***	-0.11	-0.56***	-0.80**
	(0.10)	(0.08)	(0.27)	(0.17)	(0.16)	(0.10)	(0.10)	(0.16)	(0.24)	(0.07)	(0.17)	(0.27)
Age difference (ref. Age homogamy or 1 year difference)												
Woman older(2+)	-0.24	-0.05	-0.30**	-0.19	-0.08	-0.21*	-0.31*	-0.03	-0.16	-0.20*	-0.13	-0.34*
	(0.12)	(0.13)	(0.09)	(0.17)	(0.13)	(0.10)	(0.15)	(0.16)	(0.15)	(0.09)	(0.10)	(0.17)
Man older (2-4 years)	0.15	0.25*	0.19***	0.08	0.09	0.02	0.02	0.04	0.07	0.08	0.03	0.17
	(0.08)	(0.10)	(0.06)	(0.10)	(0.09)	(0.07)	(0.12)	(0.12)	(0.11)	(0.06)	(0.08)	(0.12)
Man older (5+)	0.26**	0.35**	0.25***	0.10	0.19	0.05	-0.19	-0.17	0.14	0.12	0.07	-0.08
	(0.09)	(0.11)	(0.06)	(0.11)	(0.10)	(0.08)	(0.12)	(0.12)	(0.13)	(0.07)	(0.09)	(0.12)
NA		-0.38	0.26	-0.07								
		(0.72)	(0.29)	(1.03)								
Conceived **(ref. No conceived)**	0.98***	0.92***	0.35***	0.93***	1.39***	0.80***	1.18***	1.01***	0.77***	0.97***	0.95***	0.70***
	(0.08)	(0.12)	(0.04)	(0.09)	(0.08)	(0.09)	(0.10)	(0.12)	(0.09)	(0.07)	(0.07)	(0.09)
Educational assortative mating (ref. Both medium)												
Both low	0.85***	0.06	-0.85***	-0.35	-0.79**	-0.08	-0.29	-0.32*	-1.00***	-0.02	0.21	-0.76***
	(0.24)	(0.17)	(0.08)	(0.22)	(0.29)	(0.15)	(0.17)	(0.15)	(0.29)	(0.18)	(0.23)	(0.13)
Both high	-0.28**	0.03	-0.34***	-0.06	-0.02	0.02	0.20	0.32*	0.08	0.17*	0.01	-0.12
	(0.10)	(0.11)	(0.06)	(0.13)	(0.11)	(0.08)	(0.13)	(0.14)	(0.11)	(0.07)	(0.08)	(0.15)
He high & She medium-low	0.07	-0.01	-0.03	-0.26	0.12	0.09	-0.0001	0.24	-0.24	0.09	-0.40**	0.20
	(0.09)	(0.17)	(0.10)	(0.14)	(0.13)	(0.12)	(0.18)	(0.20)	(0.15)	(0.10)	(0.15)	(0.19)
He medium & She low	0.04	0.09	-0.54***	-0.31	-0.05	-0.10	-0.08	-0.15	-0.68**	0.14	-0.11	-0.28*
	(0.14)	(0.18)	(0.10)	(0.25)	(0.18)	(0.12)	(0.18)	(0.17)	(0.25)	(0.11)	(0.17)	(0.12)
He medium-low & She high	-0.06	-0.04	-0.09	-0.26	-0.08	-0.15	0.09	0.30*	0.04	-0.04	0.02	-0.12
	(0.12)	(0.13)	(0.06)	(0.19)	(0.10)	(0.09)	(0.16)	(0.14)	(0.13)	(0.09)	(0.09)	(0.26)
He low & She medium	0.64***	-0.22	-0.09	-0.38*	-0.43**	-0.16	-0.23	-0.09	-0.01	-0.14	0.09	-0.35
	(0.17)	(0.18)	(0.09)	(0.17)	(0.17)	(0.12)	(0.20)	(0.14)	(0.19)	(0.13)	(0.17)	(0.20)
NA		0.01	0.11	-0.10		-0.13				-0.94***	-0.07	
		(0.30)	(0.50)	(0.26)		(0.41)				(0.13)	(0.32)	

Notes: Standard errors in parentheses; *p < .05; **p < .01; ***p < .001

Table 4.B2 Cox regressions coefficients for the transition from cohabitation to first child

Transition from cohabitation to first child	AT	BE	BG	CZ	EE	FR	HU	IT	LT	NO	PL	RO
Sex(ref. Male)												
Female	0.14	0.12	0.09	0.09	-0.13	0.04	-0.10		0.24	0.03	0.15	0.05
	(0.09)	(0.10)	(0.09)	(0.16)	(0.09)	(0.07)	(0.13)		(0.17)	(0.05)	(0.10)	(0.12)
Woman age at union	0.31***	0.12	0.14	-0.04	0.55***	0.20**	0.08	-0.13	0.19	0.20***	0.10	0.09
	(0.08)	(0.09)	(0.09)	(0.12)	(0.10)	(0.06)	(0.10)	(0.07)	(0.13)	(0.05)	(0.08)	(0.12)
Woman age at union (squared)	-0.01***	-0.002	-0.004	0.0001	-0.01***	-0.004**	-0.002	0.002	-0.004	-0.003***	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.001)	(0.002)	(0.002)
Union's cohort (ref. 1990-1999)												
1967-1979	0.71	0.14	-0.25	-0.15	-0.62**	-0.29	-0.89*	-0.02	0.41	-0.47***	-0.27	0.33
	(1.02)	(0.35)	(0.16)	(0.35)	(0.21)	(0.19)	(0.38)	(0.40)	(0.42)	(0.12)	(0.27)	(0.19)
1980-1989	0.27*	-0.55**	-0.23	0.33	0.03	-0.23*	-0.34	0.13	0.17	-0.27***	0.09	0.31*
	(0.12)	(0.19)	(0.12)	(0.23)	(0.12)	(0.09)	(0.19)	(0.20)	(0.28)	(0.06)	(0.19)	(0.15)
2000-2010	0.07	0.52***	-0.08	-0.06	-0.57***	0.20	0.11	0.30*	-0.13	0.04	-0.003	-0.09
	(0.09)	(0.12)	(0.11)	(0.18)	(0.12)	(0.10)	(0.17)	(0.14)	(0.20)	(0.07)	(0.13)	(0.18)
Respondent's union order (ref. 1st union)												
Higher order union	-0.12	0.02	-0.26	-0.07	-0.03	0.12	-0.25	0.32	0.09	0.19**	0.25	0.46
	(0.12)	(0.11)	(0.27)	(0.30)	(0.15)	(0.11)	(0.15)	(0.20)	(0.33)	(0.06)	(0.20)	(0.26)
NA								0.36**				
								(0.13)				
Age difference (ref. Age homogamy or 1 year difference)												
Woman older(2+)	0.18	-0.001	-0.42*	0.85**	0.06	0.13	0.30	0.14	0.38	0.01	0.25	-0.16
	(0.14)	(0.17)	(0.18)	(0.27)	(0.15)	(0.13)	(0.23)	(0.22)	(0.32)	(0.09)	(0.18)	(0.30)
Man older (2-4 years)	0.13	0.08	-0.25*	0.25	0.05	0.23*	-0.03	0.25	0.40	0.07	0.16	-0.08
	(0.11)	(0.13)	(0.12)	(0.23)	(0.12)	(0.10)	(0.20)	(0.16)	(0.25)	(0.07)	(0.14)	(0.21)
Man older (5+)	0.15	0.19	-0.01	0.60**	0.19	0.30**	0.15	0.11	0.25	0.16*	0.15	0.07
	(0.12)	(0.15)	(0.12)	(0.23)	(0.12)	(0.11)	(0.19)	(0.16)	(0.27)	(0.07)	(0.15)	(0.20)
NA		-1.62	-0.70				-0.33					
		(1.02)	(0.72)				(0.75)					
Educational assortative mating (ref. Both medium)												
Both low	1.20***	0.47*	1.09***	0.82**	0.54**	0.37*	0.99***	0.27	0.85**	0.22	0.91***	0.75***
	(0.25)	(0.23)	(0.12)	(0.27)	(0.20)	(0.15)	(0.18)	(0.16)	(0.27)	(0.15)	(0.25)	(0.16)
Both high	-1.00***	-0.42**	-0.88***	-0.22	-0.87***	-0.59***	-0.74*	-0.27	-1.13***	-0.61***	-1.61***	-2.04**
	(0.17)	(0.15)	(0.21)	(0.33)	(0.16)	(0.11)	(0.30)	(0.24)	(0.33)	(0.08)	(0.19)	(0.72)
He high & She medium-low	-0.17	-0.15	-0.31	-0.19	-0.56**	-0.08	-0.64	-0.62	-0.66	-0.22*	-0.60*	-0.09
	(0.12)	(0.22)	(0.35)	(0.30)	(0.19)	(0.15)	(0.39)	(0.40)	(0.36)	(0.10)	(0.25)	(0.52)
He medium & She low	0.38**	0.11	0.70***	0.92**	0.31	0.44***	0.96***	0.23	0.35	0.25*	0.45*	0.47**
	(0.14)	(0.24)	(0.16)	(0.28)	(0.18)	(0.13)	(0.20)	(0.20)	(0.31)	(0.10)	(0.20)	(0.18)
He medium-low & She high	-0.61***	-0.51**	-0.64**	-0.36	-0.41***	-0.30**	-0.40	-0.27	-0.65	-0.19*	-0.69***	-1.40
	(0.18)	(0.18)	(0.21)	(0.43)	(0.12)	(0.12)	(0.30)	(0.23)	(0.34)	(0.08)	(0.16)	(1.01)
He low & She medium	-0.09	0.42*	0.70***	0.51	0.33*	0.12	0.67**	0.01	0.58*	0.10	0.15	0.20
	(0.27)	(0.20)	(0.19)	(0.26)	(0.14)	(0.13)	(0.25)	(0.18)	(0.28)	(0.11)	(0.23)	(0.31)
NA		-1.17		-0.44		-0.06				-1.46***	0.24	
		(0.72)		(0.72)		(0.45)				(0.11)	(0.39)	

Notes: Standard errors in parentheses; *p < .05; **p < .01; ***p < .001

Table 4.B3 Cox regressions coefficients for the transition from marriage to first child

Transition from marriage to first child	**AT**	**BE**	**BG**	**CZ**	**EE**	**FR**	**HU**	**IT**	**LT**	**NO**	**PL**	**RO**
Sex(ref. Male) Female	0.09	0.01	0.09**	0.04	0.06	0.06	-0.004		0.07	-0.04	0.12***	0.05
	(0.06)	(0.05)	(0.03)	(0.05)	(0.06)	(0.05)	(0.04)		(0.04)	(0.04)	(0.03)	(0.03)
Woman age at union	-0.03	0.12*	0.06	0.11	0.04	0.05	0.13**	0.05	-0.004	0.17***	-0.11***	-0.04
	(0.06)	(0.06)	(0.04)	(0.06)	(0.07)	(0.06)	(0.05)	(0.03)	(0.05)	(0.05)	(0.03)	(0.04)
Woman age at union (squared)	-0.0001	-0.003*	-0.002*	-0.003*	-0.002	-0.002	-0.003***	-0.002**	-0.001	-0.003***	0.001	0.0001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Union's cohort (ref. 1990-1999)												
1967-1979	1.15	-0.34***	-0.14**	-0.30***	-0.03	-0.04	-0.97***	0.005	-0.22***	0.09	-0.05	-0.02
	(1.02)	(0.07)	(0.05)	(0.07)	(0.08)	(0.07)	(0.05)	(0.05)	(0.06)	(0.06)	(0.04)	(0.05)
1980-1989	-0.15*	-0.06	-0.01	-0.07	0.11	-0.17**	0.03	0.04	-0.12*	-0.02	0.003	0.06
	(0.08)	(0.06)	(0.04)	(0.06)	(0.07)	(0.06)	(0.05)	(0.04)	(0.05)	(0.05)	(0.03)	(0.04)
2000-2010	-0.20*	0.11	0.07	-0.34***	-0.33*	-0.12	-0.09	0.004	-0.10	-0.16*	0.02	-0.24***
	(0.08)	(0.08)	(0.07)	(0.09)	(0.13)	(0.12)	(0.08)	(0.04)	(0.07)	(0.08)	(0.04)	(0.07)
Respondent's union order (ref. 1st union) Higher order unions	0.05	0.14*	-0.19	0.13	-0.17	-0.06	0.19*	0.15	0.19	0.14*	0.06	-0.02
	(0.11)	(0.06)	(0.22)	(0.13)	(0.15)	(0.10)	(0.08)	(0.14)	(0.20)	(0.07)	(0.16)	(0.19)
Age difference (ref. Age homogamy or 1 year difference)												
Woman older(2+)	0.15	0.06	0.02	0.08	0.04	-0.03	0.10	0.03	0.18*	-0.14	0.18***	0.02
	(0.12)	(0.09)	(0.08)	(0.12)	(0.10)	(0.09)	(0.08)	(0.07)	(0.08)	(0.08)	(0.05)	(0.07)
Man older (2-4 years)	0.002	-0.09	-0.04	0.02	-0.01	0.02	-0.01	-0.03	0.003	-0.02	-0.04	-0.003
	(0.08)	(0.06)	(0.04)	(0.06)	(0.07)	(0.06)	(0.05)	(0.04)	(0.05)	(0.05)	(0.03)	(0.05)
Man older (5+)	-0.05	0.01	-0.09	-0.14*	-0.10	0.01	0.05	-0.01	-0.03	-0.07	-0.11**	0.05
	(0.09)	(0.07)	(0.05)	(0.07)	(0.08)	(0.07)	(0.06)	(0.04)	(0.06)	(0.06)	(0.04)	(0.05)
NA		-0.26	-0.13	-0.48			0.40		-0.21			
		(0.36)	(0.24)	(0.51)			(0.58)		(1.00)			
Educational assortative mating (ref. Both medium)												
Both low	-0.14	0.23*	-0.19**	0.15	0.20	0.10	-0.01	0.20***	-0.06	0.27*	0.03	-0.003
	(0.14)	(0.09)	(0.06)	(0.16)	(0.22)	(0.09)	(0.09)	(0.04)	(0.14)	(0.13)	(0.07)	(0.06)
Both high	0.001	0.13	-0.07	-0.19*	-0.15	0.005	-0.12	0.06	-0.21***	-0.20***	-0.27***	-0.25***
	(0.11)	(0.08)	(0.05)	(0.09)	(0.08)	(0.07)	(0.06)	(0.06)	(0.06)	(0.06)	(0.04)	(0.06)
He high & She medium-low	0.09	0.10	0.04	-0.14	-0.11	0.03	0.03	0.02	-0.01	-0.24**	-0.16*	0.10
	(0.09)	(0.10)	(0.08)	(0.08)	(0.10)	(0.10)	(0.08)	(0.07)	(0.07)	(0.08)	(0.06)	(0.08)
He medium & She low	0.10	0.05	-0.09	0.02	0.33*	0.14	0.06	0.19***	0.16	-0.07	0.02	0.02
	(0.11)	(0.11)	(0.08)	(0.12)	(0.15)	(0.09)	(0.07)	(0.05)	(0.13)	(0.09)	(0.06)	(0.05)
He medium-low & She high	-0.32**	-0.07	-0.02	0.13	-0.05	-0.07	-0.02	-0.03	-0.02	-0.15*	-0.17***	-0.16
	(0.12)	(0.09)	(0.05)	(0.11)	(0.07)	(0.08)	(0.07)	(0.06)	(0.06)	(0.07)	(0.04)	(0.10)
He low &and She medium	-0.13	0.03	-0.12	-0.27*	0.17	0.05	0.04	0.07	-0.04	-0.04	-0.06	0.11
	(0.16)	(0.10)	(0.07)	(0.13)	(0.13)	(0.10)	(0.10)	(0.05)	(0.08)	(0.10)	(0.06)	(0.09)
NA		0.57**	-0.69	-0.50**		-0.06			0.26	-0.18	-0.05	
		(0.18)	(0.36)	(0.16)		(0.34)			(0.71)	(0.12)	(0.16)	
Log Likelihood	-16792	-18651	-51937	-17173	-17172	-24508	-25269	-44330	-22351	-38065	-57873	-33413

Appendix 4.C

Table 4.C1 Pairwise comparisons between levels of the educational pairing variable: regression coefficients for the transition from cohabitation to marriage

	AT	BE	BG	CZ	EE	FR	HU	IT	LT	NO	PL	RO
Both low vs **Both high**	1.126***	0.026	-0.514***	-0.288	-0.774**	-0.105	-0.486*	-0.643***	-1.079***	-0.190	0.203	-0.639***
	(0.254)	(0.156)	(0.092)	(0.251)	(0.298)	(0.147)	(0.197)	(0.168)	(0.297)	(0.175)	(0.242)	(0.184)
He high She lower vs **Both high**	0.353**	-0.040	0.307**	-0.201	0.133	0.063	-0.198	-0.088	-0.326*	-0.074	-0.407**	0.329
	(0.124)	(0.152)	(0.107)	(0.181)	(0.150)	(0.115)	(0.204)	(0.213)	(0.165)	(0.094)	(0.155)	(0.228)
He medium She low vs **Both high**	0.315*	0.060	-0.198	-0.254	-0.035	-0.123	-0.278	-0.478*	-0.765**	-0.030	-0.115	-0.157
	(0.159)	(0.166)	(0.110)	(0.278)	(0.191)	(0.123)	(0.204)	(0.188)	(0.264)	(0.108)	(0.182)	(0.176)
He lower She high vs **Both high**	0.223	-0.074	0.252***	-0.205	-0.065	-0.172	-0.109	-0.020	-0.044	-0.208**	0.010	0.001
	(0.146)	(0.111)	(0.073)	(0.216)	(0.118)	(0.091)	(0.184)	(0.158)	(0.148)	(0.077)	(0.091)	(0.283)
He low She medium vs **Both high**	0.921***	-0.256	0.249*	-0.318	-0.409*	-0.186	-0.427	-0.414*	-0.089	-0.308*	0.087	-0.222
	(0.188)	(0.173)	(0.101)	(0.203)	(0.178)	(0.123)	(0.229)	(0.163)	(0.200)	(0.128)	(0.175)	(0.237)
He high She lower vs **Both low**	-0.774**	-0.067	0.821***	0.087	0.906**	0.169	0.288	0.554*	0.753*	0.116	-0.610*	0.968***
	(0.248)	(0.200)	(0.119)	(0.254)	(0.310)	(0.171)	(0.237)	(0.218)	(0.312)	(0.187)	(0.272)	(0.217)
He medium She low vs **Both low**	-0.811**	0.034	0.316**	0.034	0.739*	-0.018	0.208	0.164	0.314	0.160	-0.318	0.482**
	(0.265)	(0.205)	(0.116)	(0.322)	(0.326)	(0.175)	(0.225)	(0.189)	(0.372)	(0.193)	(0.282)	(0.147)
He lower She high vs **Both low**	-0.903***	-0.100	0.766***	0.083	0.709*	-0.066	0.377	0.622***	1.035***	-0.018	-0.193	0.640*
	(0.260)	(0.173)	(0.092)	(0.281)	(0.297)	(0.156)	(0.222)	(0.165)	(0.307)	(0.180)	(0.245)	(0.281)
He low She medium vs **Both low**	-0.205	-0.282	0.762***	-0.030	0.364	-0.080	0.059	0.229	0.990**	-0.118	-0.116	0.417
	(0.282)	(0.212)	(0.110)	(0.267)	(0.321)	(0.176)	(0.248)	(0.164)	(0.331)	(0.205)	(0.278)	(0.222)
He lower She high vs **He high She lower**	-0.130	-0.034	-0.055	-0.004	-0.197	-0.235	0.089	0.068	0.282	-0.134	0.416**	-0.328
	(0.140)	(0.169)	(0.107)	(0.224)	(0.145)	(0.127)	(0.228)	(0.213)	(0.181)	(0.104)	(0.161)	(0.311)
He low She medium vs **He medium She low**	0.605**	-0.317	0.447***	-0.064	-0.375	-0.062	-0.149	0.065	0.676*	-0.278	0.202	-0.065
	(0.207)	(0.220)	(0.127)	(0.295)	(0.226)	(0.156)	(0.258)	(0.187)	(0.303)	(0.153)	(0.231)	(0.216)

Notes: Standard errors in parentheses; *p < .05; **p < .01; ***p < .001; reference category in bold

Table 4.C2 Pairwise comparisons between levels of the educational pairing variable: regression coefficients for the transition from cohabitation to first child.

	AT	BE	BG	CZ	EE	FR	HU	IT	LT	NO	PL	RO
Both low vs												
Both high	2.205***	0.884***	1.973***	1.040*	1.411***	0.963***	1.732***	0.539*	1.981***	0.838***	2.522***	2.792***
	(0.295)	(0.212)	(0.207)	(0.405)	(0.240)	(0.166)	(0.326)	(0.240)	(0.396)	(0.154)	(0.310)	(0.723)
He high She lower vs												
Both high	0.827***	0.269	0.578	0.034	0.308	0.509**	0.100	-0.351	0.476	0.395***	1.012***	1.944*
	(0.191)	(0.202)	(0.384)	(0.414)	(0.230)	(0.163)	(0.471)	(0.429)	(0.458)	(0.106)	(0.293)	(0.872)
He medium She low vs												
Both high	1.377***	0.523*	1.592***	1.137**	1.174***	1.032***	1.708***	0.498	1.481***	0.866***	2.066***	2.508***
	(0.206)	(0.224)	(0.235)	(0.415)	(0.229)	(0.144)	(0.334)	(0.264)	(0.423)	(0.103)	(0.262)	(0.727)
He lower She high vs												
Both high	0.391	-0.092	0.244	-0.141	0.462**	0.296*	0.344	-0.006	0.480	0.426***	0.927***	0.639
	(0.234)	(0.155)	(0.268)	(0.515)	(0.179)	(0.128)	(0.395)	(0.285)	(0.440)	(0.079)	(0.223)	(1.226)
He low She medium vs												
Both high	0.915**	0.833***	1.592***	0.736	1.197***	0.716***	1.410***	0.281	1.709***	0.712***	1.761***	2.239**
	(0.305)	(0.190)	(0.256)	(0.389)	(0.190)	(0.144)	(0.369)	(0.251)	(0.402)	(0.111)	(0.285)	(0.765)
He high She lower vs												
Both low	-1.379***	-0.615*	-1.388***	-1.007**	-1.103***	-0.454*	-1.632***	-0.890*	-1.505***	-0.443**	-1.510***	-0.848
	(0.270)	(0.262)	(0.344)	(0.379)	(0.258)	(0.197)	(0.416)	(0.398)	(0.411)	(0.169)	(0.342)	(0.515)
He medium She low vs												
Both low	-0.829**	-0.361	-0.378*	0.096	-0.237	0.069	-0.025	-0.041	-0.500	0.028	-0.455	-0.284
	(0.279)	(0.275)	(0.149)	(0.347)	(0.249)	(0.179)	(0.228)	(0.197)	(0.361)	(0.166)	(0.298)	(0.161)
He lower She high vs												
Both low	-1.814***	-0.976***	-1.721***	-1.182*	-0.949***	-0.666***	-1.388***	-0.545*	-1.501***	-0.412**	-1.594***	-2.153*
	(0.303)	(0.232)	(0.216)	(0.492)	(0.217)	(0.169)	(0.327)	(0.236)	(0.402)	(0.154)	(0.290)	(1.010)
He low She medium vs												
Both low	-1.291***	-0.051	-0.375*	-0.305	-0.214	-0.247	-0.323	-0.257	-0.272	-0.126	-0.761*	-0.553
	(0.356)	(0.250)	(0.184)	(0.347)	(0.219)	(0.180)	(0.272)	(0.182)	(0.343)	(0.171)	(0.327)	(0.300)
He lower She high vs												
He high She lower	-0.436*	-0.362	-0.309	-0.175	0.155	-0.213	0.244	0.345	0.004	0.031	-0.085	-1.304
	(0.206)	(0.222)	(0.387)	(0.500)	(0.205)	(0.167)	(0.472)	(0.430)	(0.468)	(0.108)	(0.276)	(1.121)
He low She medium vs												
He medium She low	-0.462	0.311	0.013	-0.401	0.023	-0.317*	-0.298	-0.217	0.228	-0.154	-0.305	-0.269
	(0.291)	(0.262)	(0.218)	(0.359)	(0.210)	(0.161)	(0.283)	(0.216)	(0.372)	(0.127)	(0.284)	(0.311)

Notes: Standard errors in parentheses; *p < .05; **p < .01; ***p < .001; reference category in bold

Table 4.C3 Pairwise comparisons between levels of the educational pairing variable: regression coefficients for the transition from marriage to first child

	AT	BE	BG	CZ	EE	FR	HU	IT	LT	NO	PL	RO
Both low vs												
Both high	-0.137	0.101	-0.112	0.341	0.351	0.099	0.107	0.138*	0.156	0.470***	0.298***	0.246**
	(0.172)	(0.087)	(0.073)	(0.180)	(0.231)	(0.095)	(0.103)	(0.065)	(0.147)	(0.131)	(0.083)	(0.079)
He high She lower vs												
Both high	0.088	-0.034	0.117	0.045	0.036	0.025	0.149	-0.036	0.205*	-0.037	0.112	0.349***
	(0.123)	(0.095)	(0.091)	(0.114)	(0.115)	(0.099)	(0.099)	(0.087)	(0.086)	(0.078)	(0.071)	(0.097)
He medium She low vs												
Both high	0.094	-0.084	-0.019	0.203	0.477**	0.137	0.177*	0.134	0.374**	0.131	0.289***	0.268***
	(0.143)	(0.103)	(0.086)	(0.142)	(0.159)	(0.092)	(0.087)	(0.072)	(0.138)	(0.087)	(0.072)	(0.075)
He lower She high vs												
Both high	-0.318*	-0.202*	0.056	0.313*	0.099	-0.071	0.105	-0.087	0.191**	0.048	0.101*	0.092
	(0.145)	(0.080)	(0.059)	(0.134)	(0.087)	(0.085)	(0.083)	(0.076)	(0.074)	(0.063)	(0.051)	(0.116)
He low She medium vs												
Both high	-0.133	-0.101	-0.050	-0.084	0.314*	0.041	0.158	0.015	0.172	0.156	0.215**	0.361***
	(0.187)	(0.100)	(0.081)	(0.148)	(0.138)	(0.103)	(0.113)	(0.069)	(0.096)	(0.101)	(0.071)	(0.105)
He high She lower vs												
Both low	0.225	-0.135	0.229*	-0.296	-0.314	-0.074	0.042	-0.175*	0.049	-0.508***	-0.186	0.103
	(0.160)	(0.108)	(0.099)	(0.176)	(0.238)	(0.114)	(0.115)	(0.072)	(0.153)	(0.142)	(0.095)	(0.093)
He medium She low vs												
Both low	0.232	-0.185	0.092	-0.138	0.126	0.038	0.070	-0.004	0.217	-0.339*	-0.010	0.022
	(0.167)	(0.110)	(0.088)	(0.194)	(0.262)	(0.104)	(0.101)	(0.050)	(0.186)	(0.144)	(0.093)	(0.063)
He lower She high vs												
Both low	-0.181	-0.303**	0.168*	-0.028	-0.252	-0.170	-0.002	-0.225***	0.035	-0.423**	-0.197*	-0.153
	(0.181)	(0.099)	(0.073)	(0.192)	(0.229)	(0.105)	(0.104)	(0.060)	(0.147)	(0.135)	(0.083)	(0.114)
He low She medium vs												
Both low	0.004	-0.202	0.062	-0.425*	-0.036	-0.058	0.051	-0.123**	0.016	-0.315*	-0.083	0.115
	(0.209)	(0.109)	(0.087)	(0.199)	(0.251)	(0.115)	(0.125)	(0.046)	(0.157)	(0.155)	(0.093)	(0.099)
He lower She high vs												
He high She lower	-0.406**	-0.168	-0.061	0.268*	0.063	-0.096	-0.043	-0.051	-0.014	0.085	-0.010	-0.256*
	(0.138)	(0.107)	(0.092)	(0.133)	(0.112)	(0.109)	(0.100)	(0.084)	(0.087)	(0.085)	(0.072)	(0.127)
He low She medium vs												
He medium She low	-0.227	-0.017	-0.030	-0.287	-0.162	-0.096	-0.019	-0.119*	-0.201	0.024	-0.073	0.093
	(0.188)	(0.122)	(0.099)	(0.167)	(0.187)	(0.112)	(0.113)	(0.057)	(0.150)	(0.120)	(0.083)	(0.095)

Notes: Standard errors in parentheses; *p < .05; **p < .01; ***p < .001; reference category in bold

Conclusions

Summary and discussion of main findings

The contribution of this thesis consisted of investigating the effect of education-specific mating patterns on fertility. We wanted to explore gender-driven mechanisms in social reproductive behavior by focusing on an important domain of an individual's life: education. In order to answer the general research question *how does educational assortative mating affect fertility?*, we articulated this project in two parts: individual-level analysis and couple-level analysis.

Part I: Individual-level analysis

In the first part, the principal research objective was to analyze the effect of men's education on fertility behavior. The relationship between education and fertility for women has been a long-standing research interest in family demography; in contrast, much less is known about this relationship for men. The main contribution is twofold: 1) accounting for the interrelation between family processes and how they are associated with men's education; and 2) considering the role of earning potential by field of study on men's and women's fertility trajectories.

Chapter 1: How does men's education affect the transition to fatherhood?

In the first chapter, we hypothesized that a man's education affects the transition to fatherhood via the selection into union. According to the selection-into-union hypothesis, the level of educational attainment has a consistently positive effect on men's transition into fatherhood, but this effect is largely indirect, namely through its positive effect on the rate of union formation. The underlying assumption is that highly educated men tend to be attractive on the mating market, while low educated men have more difficulty finding a committed partner and therefore, all else equal, are expected to experience lower fatherhood rates.

Our results generally supported the hypothesis; there were differences between European countries but a clear overall pattern: there is a positive educational gradient in men's union formation but, after accounting for that, not in their transition into fatherhood. This pattern shows up particularly for men who left school more than two years ago – presumably the time needed for the majority to have gained an established position in the labor market; before that,

just after leaving school, the results are more mixed. Moreover, the hypothesis seems more strongly supported in Central and Eastern European countries. In these countries, educational inequalities may be stronger, and since the gender system tends to be more traditional than in Western and Northern European countries, a high level of education for a man is an important asset to form a family.

In general, by jointly modeling union formation and fatherhood, this study was able to overcome some limitations of earlier work on education and the transition into fatherhood. Earlier studies that focused on the role of men's education were typically based on a couple-level analysis: only couples were selected in the sample (e.g., Begall 2013; Jalovaara and Miettienen 2013). Our argument is that this approach suffers from a crucial selection bias because men's education chiefly influences fertility through the selection into unions. Alternatively, studies in the transition-to-adulthood tradition have typically failed to control for the female partners' educational attainment, ignoring strong educational homogamy and, hence, unable to tell whether it is his or her education that matters (Corijn and Klijzing 2001; Winkler-Dworak and Toulemon 2007).

This study strongly emphasizes the role of interlinked processes in line with the theoretical approaches of the life course (Huinink and Kohli 2014). We argued that the role of men's characteristics on fatherhood needs to be examined in relation to men's partnership status. As a direct consequence of this claim, we disregarded dynamics related to single fatherhood, which typically occurs among the more disadvantaged strata of society (Carlson et al. 2013). Highly educated men are attractive partners and tend to form more stable unions, which eventually are conducive to childbearing. As a result, while fertility rates within the context of a union may be higher among highly educated men, the opposite may hold with regard to the role of education on fertility outside unions, i.e., low educated men tend to have higher fertility rates outside unions.

Chapter 2: Are there gender differences in the effect of education on fertility?

In the second chapter, we compared men's and women's transitions to first, second, and third births. The main contribution has been to consider an additional dimension of education, i.e., the earning potential by field of study, both for men and women. Micro-economic theories of the family predict gender differences in the effect of earning potential and educational level on fertility (Becker 1991); we tested to what extent gender differences exist for a group of eight European countries.

Overall, the findings showed that the differences between men's and women's educational gradients in fertility mostly concern the transition to parenthood, rather than higher order births. Moreover, the earning potential by field of study has similar effects on fertility for both men and women, which is in contrast with predictions derived from economic theories of the family.

Similar to the results of the first chapter, a key variable to understand our findings is the role of partnership status, along with partners' education. With regard to the transition to parenthood, in line with the selection-into-union hypothesis (Chapter 1), we found that the positive educational gradient in men's first births disappears once we control for partnership status. For women, in contrast, once we included the union status variable, a negative educational gradient in first birth shows up. This latter finding highlights that the selection-into-union hypothesis may hold for women's as well. In fact, scholarly work has emphasized the fact that the relationship between education and union formation is turning positive, at least in some countries (cf. Goldscheider et al. 2015).

Next, we found that the role of the partner's education is stronger for women's second birth rates, in line with previous studies (Kreyenfeld 2002; Kreyenfeld and Koniektza 2008). After controlling for partnership status, the positive effect of women's education on second births disappears. With regard to third births, instead, we observed a negative educational gradient for both women and men.

Unexpectedly, we found a negative effect of earning potential for both women and men, which is particularly evident in higher order births; a finding that highlights the role of the opportunity costs of children. While the negative effect of earning potential on fertility for women is in line with our expectations, the negative effect of earning potential for men is unexpected. We can speculate that men who desire a second child are more inclined to be involved in housework. Since both the economic burden and the time invested in childrearing increase after the first child, both women and men need to be involved in housework if they want to proceed with the second child; this is why opportunity costs show up for men too.

The fact that women and men appear more similar than expected may be also related to the choice of our baseline-hazard, since we chose the end of schooling as the start of our observational period. We preferred to take this route to completely focus on the role of educational attainment and field by limiting, to some extent, endogeneity problems derived from the fact that education and fertility are strongly interdependent processes, especially for women (Marini 1984; Billari and Philipov 2004; Martín-García and Baizan 2006). It is

plausible to expect that gender differences in the effect of education on fertility could be somewhat more marked if our baseline hazard was respondent's age instead of time since graduation; despite the fact that both women and men are normatively under pressure to finish their education before embarking in family processes.

Focusing on the results of the analyses with only the medium and highly educated respondents, we notice that the effect of education and earning potential tend to follow the same patterns for women and men. The fact that gender differences in the effect of education and earning potential do not emerge strongly may also highlight the role of educational assortative mating. The higher the level of educational homogamy, the more the effect of education on fertility will be similar between the two genders (Kravdal and Rindfuss 2008; Struffolino, Studer and Fasang 2016).

Assuming that all men and women manage to enter into a partnership, if assortative mating was perfect, i.e., each man with given educational level was partnered with a woman of the same educational level, differentials in fertility will be linked only to the level of education and not to gender. This is because, since the totality of highly educated men is partnered with the totality of highly educated women, highly educated men and highly educated women must end up with the same fertility. Such a situation would be the consequence of no selection into union driven by education; however, educational homogamy, despite being strongly diffused, is not universal. Men and women with the same educational level who mate with a partner with a different level of education may have different life trajectories: the effect of one's own education may depend more on the other partner's education, widening gender differences in the effect of education on fertility.

Part II: Couple-level analysis

As seen from the results of the previous chapter, studying women's and men's fertility separately gives us an incomplete picture of the impact of education on fertility. Partnership formation, in general, and educational assortative mating, in particular, may play a role in shaping fertility for both women and men; the effect of their own education on fertility may also depend on their partner's education.

Chapter 3: How does educational pairing affect couples' fertility?

In this study, we explored the relationship between educational pairing and couples' transitions to first, second, and third births. We focused on the earning potential by field of study as an additional dimension of education, beyond the level of educational attainment of the partners. Compared to previous studies, we were able to estimate the earning potential of

the field of study and account for unobserved characteristics of the couple that affect the selection into parenthood.

Overall, we found consistent support for the fact that an imbalance of earning potential and education in favor of the man may be conducive to fertility. We found that hypergamous couples composed of a highly educated man tend to have higher first, second, and third birth rates than hypogamous couples with a highly educated woman. Moreover, with regard to the role of earning potential by field of study, we found that couples where the man has a higher earning potential than the woman have higher second birth rates than other pairings. However, this effect does not hold strong with regard to first and third birth rates. Inspecting the data, we noticed that couples where the man has a higher earning potential than the woman were typically homogamous couples with regard to the field of study, which was male-dominated or balanced. These kinds of fields are usually considered not conducive to childbearing for women (cf. Tesching 2012; Begall and Mills 2013). It could be that a man's higher earning potential inhibited female partners from investing in their human capital and they rather embark in childbearing in order to meet a two-child goal. However, this kind of pairing may not be efficient for an additional birth, since the economic burden raises notably with a third child.

Next, we found that there is not a statistically significant difference in higher order birth rates between hypergamous couples and highly educated homogamous couples. This implies that positive assortative mating for a highly educated woman is associated with higher fertility. This finding has been interpreted by following those arguments that state that highly educated men tend to be more gender-egalitarian and probably more willing to share housework in order to persuade the partner to have an additional child. However, while women's education is generally associated with stronger attachment to the labor force, it can also be that the higher earnings (due to higher education) of the partner discourage the dual-career family model, reinforcing more traditional patterns. Among the less educated, instead, her lower education discourages equality in sharing income responsibilities, but the lower earnings of the male partner may encourage low educated women to also contribute to the budget (Evertsson et al. 2009).

In our empirical study, we could not completely disentangle the two lines of arguments, but we did find that the role of earning potential, associated with the field of study, and the role of educational level tend to diverge; this corroborates the idea that homogamy in educational level entails a different meaning than homogamy with regard to earning potential.

Still, it remains to be seen to what extent these results hold with other sets of data and with a more refined estimation of earning potential.

Chapter 4: How does educational pairing affect the pathway to first birth?

In this study, we examined whether and how educational pairing affects the likelihood of first birth within marriage versus within cohabitation in twelve European countries. We observed couples who were in co-residential unions and examined their pathways to parenthood by means of multistate modeling.

Overall, we found the most support for the hypothesis that a higher level of human capital is associated with a lower likelihood of non-marital family formation. This hypothesis is based on the argument that educational resources, used as proxies for long-term good economic prospects, are perceived as prerequisites to marry. Our results show that couples with lower human capital tend to stay longer in unmarried relationships and they also tend to have a higher transition rate to a non-marital first birth, compared to their counterparts with higher human capital, in most of the countries considered. The presence of at least one highly educated partner, independently of whether it is he or she, inhibits the rate of a non-marital first birth. Hence, what has been called the "pattern of disadvantage" framework, which usually refers to non-marital childbearing, is supported by our study. The better-educated partners do not necessarily avoid cohabitation altogether, but they are more likely to get married once they expect to have a child or after having a child already.

Theoretical and empirical considerations

The overall original contributions of this thesis have been more empirical than theoretical. In this project, we argued that for men who want to become fathers, the process of union formation is fundamental and their role in fertility needs to be seen in perspective, namely being aware that a process of selection occurs. Once in a couple, however, it is important to consider with whom a man or a woman has partnered, since their fertility behavior may also depend on the characteristics of their partners. In the following subsections, we reflect on the strengths and limitations of the thesis by looking at the theoretical perspectives in combination with the empirical work in order to outline a research agenda for the future.

On theories and theoretical frameworks

In general, economic perspectives were considered more conducive to formulate hypotheses about the role of both partners' education on fertility than sociological perspectives, which

attempt to address the role of interdependence in partners' lives (cf. Huinink and Kohli 2014). Micro-economic theories derived from Becker's work, despite being founded on the male-breadwinner family model that has declined over time, have the merit of referring to a general framework, which is not limited to fertility but also includes assortative mating, marriage formation, and divorce. This broad framework facilitates making clearer predictions about the role of men's and women's education on fertility, even if many predictions derived from the theory turn out to be wrong, as we have shown in some of the empirical studies.

Perspectives addressing the interdependence of partners' lives emphasize the role of preferences that partners develop for the family or career domain (Huinink and Kohli 2014). Plausibly, the educational homogamy of the partners entails similar life paths, which can homogenize partners' preferences regarding family life (Thomson 1990). However, it is not clear whether this will have positive or negative effects on fertility and how these effects will manifest. It could be that partners with similar educational pathways will converge on the decision to remain childless, have at most one child, or postpone children as long as possible, in this way offsetting positive effects of homogamy on fertility, while the partnership can still be very solid.

Similarly, theoretical approaches that emphasize the role of gender-egalitarianism within the couple and in society at large fail to yield clear predictions about the quantum and timing of fertility (cf. Esping-Andersen and Billari 2015; Goldscheider et al. 2015). Moreover, these theoretical perspectives seem to downplay the fact that men's socioeconomic resources remain a necessary condition, even if insufficient, for family formation. For men, being a steady earner is still a requirement to be considered a good long-term partner (Cherlin 2016:124); having a high level of education, as we have shown, enables men to meet this requirement, with positive effects on fertility. Things may change in the near future, and women's socioeconomic resources may also become more important for the formation of new families (Sweeney 2002; Vignoli et al. 2012; Van Bavel 2012; De Hauw et al. 2015).

The idea that gender equality is more widespread at the top of the educational scale (Esping-Andersen 2009; Evertsson et al. 2009) may conflict with the fact that gender equality becomes a need. Highly educated men, who are more attractive on the mating market, may not necessarily be willing to share domestic work (even if this interpretation has been put forward). Low educated men may be "obliged" to share the domestic work, perhaps to allow their partners to contribute to the budget, given that their sole contribution to the family income may not be enough. On one hand, we may have a polarization from the side of the

highly educated, i.e., those highly educated people who will be happy to share tasks with their partners in order to have children and highly educated men who would rather prefer not to have children in order to avoid domestic work (Jensen 2010). On the other hand, we may have low educated men who accept sharing economic and household responsibilities in order to enhance their standards of living (Van Bavel 2012). Taken together, this highlights the role of men's preferences for family life, which has been overlooked so far, for example by Hakim (2003). It remains unclear, then, to what extent gender-egalitarianism will have those positive effects for future fertility levels without having clues on the roles of individuals' (both women and men) preferences and constraints.

Next, a theoretical reflection that has also repercussions for our empirical design concerns the choice of the time frame. The role of education has been framed mostly as a dimension that affects opportunity and constraints over individuals' life courses. The life course approach, however, also emphasizes the role of cohort-memberships (Elder 1975, 1994). Our approach has been synchronic in nature, rather than diachronic, since cohort changes in the effect of education on fertility have not really been investigated. A diachronic perspective is very insightful in principle, but it is difficult; with the available data, it is hard to find out whether the effect of education and educational assortative mating on fertility has changed over time or if it is rather the meaning of education itself that has changed over time. Compositional changes that have occurred within the groups of low educated and highly educated individuals are not trivial problems to face when keeping a diachronic perspective, and in turn it also becomes demanding in terms of data suitability to explore changes over time.

Finally, while we emphasized the role of selection *into* unions and the links between partnership formation and fertility, we disregarded the role of selection *out* of unions. The theoretical scheme presented in the overview at the beginning of the thesis misses the relationships that exist between education, partnership formation, and union dissolution, both at the individual and couple levels. Educational differentials in dissolution and re-partnering rates exist between women and men, and as a consequence, they affect the role of educational assortative mating on dissolution (cf. Härkönen and Dronkers 2006; Lyngstad and Jalovaara 2010; Schwartz and Han 2014; Theunis et al. 2015). Thus, the theoretical framework behind our empirical studies is generally more adequate to address fertility in cohabiting unions than single motherhood or single fatherhood; it is more adequate for studying couples' fertility for more stable unions than for unstable unions. Overall, it is a reasonable choice when the main

outcome is fertility, considering that: 1) the majority of births occur within cohabiting unions (Perelli-Harris et al. 2010); and 2) union dissolution cannot (still) be considered an engine for fertility rates (Thomson et al. 2012; Van Bavel, Jansen and Wijckmans 2012).

Strengths and limitations of the empirical studies

A first caveat for this thesis regards the data. We cannot be sure about whether or not the men in our sample may have had other, perhaps unacknowledged, children than the ones identified. Overall, we are more interested in children who are at least actually acknowledged by their fathers than in biological fatherhood per se. Still, it may be the case that some men have underreported their children in GGS data, either unintentionally (they simply do not know about those children) or intentionally (Alich 2009). In this last case, the intentional underreporting may be linked to social desirability and social pressure. Men who are afraid to be socially sanctioned for their extra-union childbearing behavior, or men who are in trouble for paying child alimony, may tend to omit children born from dissolved unions and who do not co-reside with them anymore (Lindberg et al. 1998; Joyner et al. 2012). The GGS questionnaire has been designed in a way that questions about child alimony and support are asked separately, after reporting fertility and partnership histories. This kind of design has been considered useful to limit male fertility underreporting (Lindberg et al. 1998; Alich 2009). Still, it remains to be seen whether our findings can be replicated with other data.

Next, we should underline the pros and cons related to our estimates of the earning potential of the field of study. First, the idea to use a different source to directly estimate earning power is a good way to limit endogeneity problems in case of missing detailed time-varying information on lifetime earnings (Xie et al. 2003). However, we could only estimate the earning potential of people who were in the labor force at the time of the survey. On the one hand, this can be considered an advantage, since in this way our measure of earning potential does not reflect parenthood status, limiting endogeneity issues. On the other hand, this is a shortcoming, since our estimate of earning potential, measured in income deciles, tends to vary little across fields of study within a country. Moreover, our regressions of earning potential tend to have low predictive power. This is most likely related to the fact that we did not include occupation in our OLS regressions; the inclusion of an individual's occupation would have enhanced the predictive power of our function, but since occupation also reflects parenthood status, we would have risked incurring endogeneity issues. Overall, we suggest that the combination of different data sources is a promising analytical strategy with regard to studies that focus on micro-level fertility behavior. In the future, however, it

could be helpful to refine the variable of earning potential and, if feasible, add other indicators of labor market success by field of study, e.g., unemployment risks.

With regard to the two couple-level studies, it must be noticed that we used a selective sample, i.e. we considered only those unions that were intact at the time of interview. While this may have advantages with regard to the quality of reported fertility and partnership information (cf. Vergauwen et al. 2015), since people tend to report and better recall events related to the present, it becomes a limitation in our sample because the more stable couples, i.e., where childbearing is more likely, are overrepresented. This caveat is inherently linked to the theoretical flaw that we highlighted above: the missing link with the selection *out* of unions. In the future, probably by means of longitudinal data, it would be interesting to examine to what extent our results were affected by dissolution rates, which may differ across educational pairings and across union types, i.e., marriage or cohabitation.

Another aspect to be considered is the role of measurement issues linked to the fact that we could not include the educational pairing as a time-varying covariate because of a lack of information. Our results may suffer from anticipatory bias, since partners may have acquired their highest level of education after they started to co-reside. The use of more detailed data that include the full educational history of both partners could help to avoid anticipatory bias when applying event history analysis (Hoem and Kreyenfeld 2006). In our studies, most of those who became parents after starting the co-residential union got their highest educational attainment before the birth of the child; however, in the future, it would be interesting to test to what extent patterns of educational assortative mating are affected by fertility itself. Some respondents, more likely women, may have interrupted their studies to become parents and this could have affected their educational pairing: assortative mating may affect fertility and, in turn, fertility trajectories may affect educational assortative mating.

Finally, in line with the life course approach, we used extensions of event history models for three out of four empirical chapters. Identifying multiprocess models and models with unobserved heterogeneity, however, is not so straightforward. The lack of repeatable events may prevent the model from reaching convergence and some restrictions on the estimated parameters need to be specified; this is also the case when there are low numbers of events per covariate. A good estimation process is favored by a careful choice of the starting values: "selection of good starting values is somewhat an art" (Lillard and Panis 2003:18), which is often a time-consuming process. In our first chapter, given that we faced non-repeatable events, we proceeded very carefully. First, we estimated the simplest models with two

software programs (STATA and aML), since the basic results need to be similar. Then, we proceeded to estimate models of increasing complexity, updating the starting values each time. Sensitivity analyses were carried out to assess to what extent estimates of substantial interest for our topic would have been biased by restricting the variance parameters; afterward, we could finally conclude that the results were robust. However, it is necessary to underline that if the whole aim of a study relies on values of the unobserved heterogeneity (and this is not our case), then this procedure would not be adequate and other solutions should be found.

Overall, in all the models of this thesis, like in the majority of demographic studies that focus on micro-level behavior, the outcome of interest is the hazard rate (or transition rate). The hazard rate, however, combines information regarding both the timing and quantum of events, leading to difficulties in interpretation, a problem which has not been solved in this thesis since we always referred to "rates." This is much less of a problem when everybody (or the majority of individuals) in the sample experiences the event, since the quantum eventually ends up to one, whereas this is more problematic in those cases when the differential in quantum is much higher (e.g., experience of a third birth). The inclusion of unobserved heterogeneity may, to some extent, account for the fact that some individuals (for unobserved reasons) have less inclination to experience an event than others; however, it is not helpful enough to disentangle whether the inclination refers to the timing or to the quantum. In the future, techniques that are able to provide simultaneous estimates for the two dimensions, i.e., timing and quantum, could be applied, and it is especially important for studies that include education in their framework: it is plausible that participation in education may tend to be negative on the timing of fertility, rather than on the overall quantum.

Policy relevance and concluding remarks

Societal changes that have occurred in the last few decades have emphasized the changing meaning of fatherhood and the importance of gender-egalitarianism at both the individual and societal levels for the future of the family (Esping-Andersen and Billari 2015; Goldscheider et al. 2015). The increasing participation of women in higher education and labor force participation have had notable consequences on men's life courses. The general aim of this thesis has been to (re)consider the role of men in fertility by focusing on two dimensions that affect inequalities in society: gender and education. In this section, we discuss some policy implications of the results of this thesis.

The positive educational gradient in men's birth rates points to the fact that policies that aim to reduce long-term educational inequalities may have positive effects on fertility. Moreover, these policies may also have long-term positive effects for low educated men overall, since lowering their risk of remaining childless may entail positive effects on their wellbeing at older ages (Eggebeen and Knoester 2001; Dykstra 2009).

In connection with the previous point, in the last chapter of this thesis, we showed that there is an association between non-marital childbearing and lower human capital. This implies that children born from less educated people tend to have lower socioeconomic resources, which may have a negative effect on their wellbeing. The disadvantage refers not only to the lack of socioeconomic resources, but also to the fact that cohabiting unions are less stable and have a lower relationship quality (Harknett 2008). The diffusion of cohabitation and non-marital childbearing among the less educated would exacerbate inequalities in society: children born to low educated parents would more frequently face the dissolution of their parents' union and suffer higher poverty rates (McLanahan 2004; McLanahan and Percheski 2008). Social policies aiming to reduce inequalities in societies will probably need to find ways to adapt institutions to new family structures (Perelli-Harris and Sanchez-Gassen 2012).

Moving forward to the other dimension, i.e., gender, the relevance of promoting gender-equality policies for both women and men remains, with the caveat that these types of policies may have at least two types of counter-effects. On the one hand, they may risk reinforcing labor market gender-segregation. For instance, generous maternal leaves may to some extent favor the inactiveness of women, who may be more oriented to choose female-dominated occupations or occupations in the public sector, which are typically paid less but have a lower risk of skill depreciation (Gornick et al. 2003). On the other hand, gender-equality policies may increase expectations toward fatherhood in a way that prevents men from choosing the "family track" (Jensen 2010).

At some point, for disadvantaged men, gender egalitarianism may be the result of constraints rather than a chosen personal attitude. As a result, the concept of being a breadwinner may shift its boundaries: men with a lower breadwinner status tend to more easily accept gender egalitarian ideologies; similarly, men with egalitarian views tend to be more likely to equally share the breadwinning role (Zuo 2004). In both cases, the role of contextual constraints is fundamental. A couple where the man (independent of his economic status) will eventually embrace gender-egalitarian views by being willing to share both

economic and household responsibilities may face problems in actually realizing the dual-career family model, especially if the context does not offer opportunities to easily combine work and family, e.g., by lacking childcare services.

Overall, the way education and gender (equality) interact in differentiating the fertility levels of couples will have consequences for the reproduction of inequalities in society. The heterogeneity of European countries in this regard may serve as a "laboratory" to explore the role of contextual factors and possible policy outcomes. While theories about gender-egalitarianism and fertility tend to be optimistic regarding positive outcomes for fertility, empirical evidence shows that European countries are far from reaching a convergent behavior in the relationship between gender-education and fertility (cf. Cherlin 2016; Goldscheider et al. 2015).

Similar fertility levels across contexts may be the output of different social processes. For instance, in Chapter 3, we have seen that couples where both partners are highly educated have higher second birth rates, especially in Western countries, whereas in southern Eastern countries, the low educated homogamous couples have higher second birth rates. At the extremes, such polarized behavior in the relationship between educational assortative mating and fertility may lead to a widening of social inequalities, driven by the fact that in poorer European countries couples who tend to have more children are those with lower human capital, whereas in richer countries, couples who tend to have more children are those with more human capital.

We acknowledge that our arguments about policy implications lose strength due to the fact that the focus of this thesis is on micro-level behavior. An explicit examination of contextual factors that may be associated with the intersection between gender, education, and fertility (e.g., welfare state, gender culture, mating markets) is, in fact, lacking. We are aware of the fact that these relationships strongly vary across countries and the challenge to reconcile micro-macro levels of analysis, hoping for improvements in data availability, remains an important task for the future.

References

Aassve, A., F.C. Billari, F. Michielin, and C. Panis. 2003. "A Monte Carlo Study of (simultaneous) Hazard Models with Flexible Baseline and Normally Distributed Error Terms." In *Annual Meeting of the Population Association of America, May 1-3*. Minneapolis.

Alich, D. 2009. "Fatherhood in Russia between 1970 and 2004: The Male Perspective of Family and Fertility Behavior in a Changing Society." *Wirtschafts- Und Sozialwissenschaftlichen Fakultät Der Universität Rostock*. University of Rostock.

Bagavos, C. 2010. "Education and Childlessness: The Relationship between Educational Field, Educational Level, Employment and Childlessness among Greek Women Born in 1955-1959." *Vienna Yearbook of Population Research* vol.8: 51–75.

Baizán, P., A. Aassve, and F. Billari. 2003. "Cohabitation, Marriage, and First Birth: The Interrelationship of Family Formation Events in Spain." *European Journal of Population* 19 (2): 147–69.

Balbo, N., F. Billari, and M. Mills. 2012. "Fertility in Advanced Societies: A Review of Research." *European Journal of Population*.

Bartus, T., L. Murinkó, I. Szalma, and B. Szél. 2012. "The Effect of Education on Second Births in Hungary." *Demographic Research* 28: 1–32.

Basten, S., T. Sobotka, and K. Zeman. 2014. "Future Fertility in Low Fertility Countries." In *World Population and Human Capital in the Twenty-First Century*, edited by W. Lutz, W.P. Butz, and Samir KC. Oxford: Oxford University Press.

Basu, A.M. 2002. "Why Does Education Lead to Lower Fertility? A Critical Review of Some of the Possibilities." *World Development* 30 (10): 1779–90.

Bauer, G., and M. Jacob. 2009. "The Influence of Partners' Education on Family Formation." *Mannheim University EqualSoc Working Paper*.

Bauer, G., and T. Kneip. 2013. "Fertility From a Couple Perspective: A Test of Competing Decision Rules on Proceptive Behaviour." *European Sociological Review* 29 (3): 535-548.

Beaujouan, É., T. Sobotka, Z. Brzozowska, and K. Neels. 2013. "Education and Sex Differences in Intended Family Size in Europe, 1990s and 2000s." In *Changing Families and Fertility Choices*, 6–7 October. Oslo.

Becker, G.S. 1964. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education.* Chicago: University of Chicago Press.

———. 1991. *A Treatise on the Family*. Cambridge: MA: Harvard University Press.

Begall, K. 2013. "How Do Educational and Occupational Resources Relate to the Timing of Family Formation? A Couple Analysis of the Netherlands." *Demographic Research* 29: 907–36.

Begall, K., and M.C. Mills. 2013. "The Influence of Educational Field, Occupation, and Occupational Sex Segregation on Fertility in the Netherlands." *European Sociological Review* 29: 720–42.

Berghammer, C., K. Fliegenschnee, and E.-M. Schmidt. 2014. "Cohabitation and Marriage in Austria." *Demographic Research* 31: 1137–66.

Bernhardt, E. 2004. "Is the Second Demographic Transition a Useful Concept for Demography?" *Vienna Yearbook of Population Research* vol.2: 25–28.

Billari, F. 2004. "Becoming an Adult in Europe: A Macro(/Micro)-Demographic Perspective." *Demographic Research* Special 3: 15–44.

Billari, F., and D. Philipov. 2004. "Education and the Transition to Motherhood: A Comparative Analysis of Western Europe." *European Demographic Research Papers*, Vienna Institute of Demography Working Papers, no 3.

Billari, F.C., and A.C. Liefbroer. 2007. "Should I Stay or Should I Go? The Impact of Age Norms on Leaving Home." *Demography* 44 (1): 181–98.

Blackwell, D.L., and D.T. Lichter. 2000. "Mate Selection Among Married and Cohabiting Couples." *Journal of Family Issues* 21 (3): 275–302.

Blau, F.D., and L.M. Kahn. 2016. "The Gender Wage Gap : The Gender Wage Gap : Extent , Trends , and Explanations." *IZA Discussion Paper Series*, no. 9656.

Bledsoe, C., S. Lerner, and J.I. Guyer, eds. 2000. *Fertility and the Male Life-Cycle in the Era of Fertility Decline*. New York: Oxford University Press.

Blossfeld, G.J. 2014. "Educational Assortative Mating and Divorce: A Longitudinal Analysis of the Influences of Education on the Divorce Rate for Different Educational Matches." In *Annual Meeting of the Population Association of America, May 1-3*. Boston.

Blossfeld, H., and J. Huinink. 1991. "Human Capital Investments or Norms of Role Transition? How Women's Schooling and Career Affect the Process of Family Formation." *American Journal of Sociology* 97 (1): 143–68.

Blossfeld, H.-P. and A. Timm, eds .2003. *Who Marries Whom? Educational Systems As Marriage Markets in Modern Societies*. Dordrecht: Kluwer Academic Publishers.

Blossfeld, H.-P. 2009. "Educational Assortative Marriage in Comparative Perspective." *Annual Review of Sociology* 35 (1): 513–30.

Blossfeld, H.-P., and S. Drobnic. 2001. *Careers of Couples in Contemporary Society. From Male Breadwinner to Dual Earner Families*. Oxford: Oxford University Press.

Blossfeld, H.-P., E. Klijzing, M. Mills, and K. Kurz, eds. 2005. *Globalization, Uncertainty, and Youth in Society*. London: Routledge.

Blossfeld, H.-P., K. Golsch, and G. Rohwer. 2007. *Event History Analysis with Stata . Mahwah Erlbaum Associates.* Mahwah, New Jersey: Lawrence Erlbaum Associates.

Bongaarts, J. 1978. "A Framework for Analyzing the Proximate Determinants of Fertility." *Population and Development Review* 4 (1): 105–32.

Bozon, M. 1991. "Women and the Age Gap between Spouses: An Accepted Domination?" *Population. English Selection* 3 (1991): 113–48.

Brien, M.J., L. a Lillard, and L.J. Waite. 1999. "Interrelated Family-Building Behaviors: Cohabitation, Marriage, and Nonmarital Conception." *Demography* 36 (4): 535–51.

Brines, J., and K. Joyner. 1999. "The Ties That Bind: Principles of Cohesion in Cohabitation and Marriage." *American Sociological Review* 64 (3): 333.

Bryan, M.L., and S. Jenkins. 2015. "Multilevel Modelling of Country Effects: A Cautionary Tale." *European Sociological Review*, 1–20.

Carlson, M.J., A.G. VanOrman, and N. V. Pilkauskas. 2013. "Examining the Antecedents of U.S. Nonmarital Fatherhood." *Demography* 50 (4): 1421–47.

Cech, E.A. 2015. "Mechanism or Myth?: Family Plans and the Reproduction of Occupational Gender Segregation." *Gender & Society* 20 (10): 1–24.

Charles, M., and K. Bradley. 2009. "Indulging Our Gendered Selves? Sex Segregation by Field of Study in 44 Countries." *American Journal of Sociology* 114 (4): 924–76.

Cherlin, A.J. 2016. "A Happy Ending to a Half-Century of Family Change ?" *Population and Development Review* 42 (1): 121–29.

Cigno, A. 1991. *Economics of the Family*. Oxford: Clarendon Press.

Cigno, A., and J. Ermisch. 1989. "A Microeconomic Analysis of the Timing of Births." *European Economic Review* 33: 737–60.

Cooney, T.M., and P. Uhlenberg. 1989. "Family-Building Patterns of Professional Women : A Comparison of Lawyers , Physicians , and Postsecondary Teachers." *Journal of Marriage and Family* 51 (3): 749–58.

Corijn, M., and E. Klijzing. 2001. *Transition to Adulthood in Europe*. Dordrecht: European Population Series, Klawuer Publishers.

Corijn, M., A. Liefbroer, and J. de J. Gierveld. 1996. “It Takes Two to Tango, Doesn’t It? The Influence of Couple Characteristics on the Timing of the Birth of the First Child.” *Journal of Marriage and the Family* 58 (1): 117–26.

De Hauw, Y., A. Grow, and J. Van Bavel. 2015. “The Shifting Gender Balance in Higher Education and Assortative Mating in Europe.” In *Annual Meeting of the Population Association of America, April 30 - May 2*. San Diego, CA.

De Wreede, L.C., M. Fiocco, and H. Putter. 2011. “Mstate : An R Package for the Analysis of Competing Risks and Multi-State Models.” *Journal of Statistical Software* 38 (7): 1–30.

DiPrete, T.A., and C. Buchmann. 2006. “Gender-Specific Trends in the Value of Education and the Emerging Gender Gap in College Completion.” *Demography* 43 (1): 1–24.

Dribe, M., and M. Stanfors. 2010. “Family Life in Power Couples: Continued Childbearing and Union Stability among the Educational Elite in Sweden, 1991-2005.” *Demographic Research* 23: 847–78.

Dykstra, P. 2009. “Childless Old Age.” In *International Handbook of Population Aging*, edited by P. Uhlenberg, 671–90. New York: Springer.

Eeckhaut, M.C.W., B. Van de Putte, J.R.M. Gerris, and a. a. Vermulst. 2011. “Analysing the Effect of Educational Differences between Partners: A Methodological/Theoretical Comparison.” *European Sociological Review* 29 (1): 60–73.

Eggebeen, D.J., and C. Knoester. 2001. “Does Fatherhood Matter for Men?” *Journal of Marriage and Family* 63 (2): 381–93.

EIGE. 2015. “Gender Equality Index 2015 in the European Union 2005-2012*”*. *European Institute for Gender Equality*. http://eige.europa.eu/sites/default/files/documents/mh0415169enn.pdf Accessed April, 2016.

Elder, G.H. 1975. “Age Differentiation and the Life Course.” *Annual Review of Sociology* 1 (1): 165–90.

———. 1994. “Time , Human Agency , and Social Change : Perspectives on the Life Course.” *Social Psychology Quarterly* 57 (1): 4–15.

England, P. 2010. “The Gender Revolution: Uneven and Stalled.” *Gender & Society* 24 (2): 149–66.

England, P., G. Farkas, B. Stanek Kilbourne, and T. Dou. 1988. “Explaining Occupational Sex Segregation and Wages : Findings from a Model with Fixed Effects.” *American Sociological Review* 53 (4): 544–58.

Esping-Andersen, G. 1999. *Social Foundations of Postindustrial Economies*. Oxford: Oxford University Press.

Esping-Andersen, G. 2009. *The Incomplete Revolution. Adapting Welfare States to Women's New Roles*. Cambridge: Polity press.

Esping-Andersen, G., and F.C. Billari. 2015. "Re-Theorizing Family Demographics." *Population and Development Review* 41 (1): 1–51.

Esteve, A., J. García-Román, and I. Permanyer. 2012. "The Gender-Gap Reversal in Education and Its Effect on Union Formation: The End of Hypergamy?" *Population and Development Review* 38: 535–46.

European Commission. 2015. "European Semester Thematic Fiche - Resource Efficiency," 1–19. http://ec.europa.eu/europe2020/pdf/themes/2016/resource_efficiency_201605.pdf. Accessed April, 2016.

Evertsson, M., P. England, I. Mooi-Reci, J. Hermsen, J. De Bruijn, and D. Cotter. 2009. "Is Gender Inequality Greater at Lower or Higher Educational Levels? Common Patterns in the Netherlands, Sweden, and the United States." *Social Politics* 16 (2): 210–41.

Fokkema, T., A. Kveder, N. Hiekel, T. Emery, and A.C. Liefbroer. 2016. "Generations and Gender Programme Wave 1 Data Collection." *Demographic Research* 34: 499–524.

Forste, R. 2002. "Where Are All the Men?: A Conceptual Analysis of the Role of Men in Family Formation." *Journal of Family Issues* 23 (5): 579–600.

Frejka, T. 2008. "Overview Chapter 5: Determinants of Family Formation and Childbearing during the Societal Transition in Central and Eastern Europe." *Demographic Research* 19: 139–70.

Gerster, M., N. Keiding, L.B. Knudsen, and K. Strandberg-Larsen. 2007. "Education and Second Birth Rates in Denmark 1981-1994." *Demographic Research* 17: 181–210.

Goldin, C. 2006. "The Quiet Revolution That Transformed Women ' S Employment , Education , and Family." *The American Economic Review* 96 (2): 1–21.

Goldscheider, F. 2012. "The Gender Revolution and the Second Demographic Transition: Understanding Recent Family Trends in Industrialized Societies." *Keynote Address, European Population Conference*. Stockholm, 13 June.

Goldscheider, F., E. Bernhardt, and M. Brandén. 2013. "Domestic Gender Equality and Childbearing in Sweden." *Demographic Research* 29: 1097–1126.

Goldscheider, F., E. Bernhardt, and T. Lappegård. 2014. "Studies of Men's Involvement in the Family--Part 1: Introduction." *Journal of Family Issues* 35 (8): 995–99.

———. 2015. "The Gender Revolution : A Framework for Understanding Changing Family and Demographic Behavior." *Population and Development Review* 41 (2): 207–39.

Goldscheider, F., and G. Kaufman. 1996. "Fertility and Commitment: Bringing Men Back in." *Population and Development Review* 22: 87–99.

Goldscheider, F., and L. Waite. 1986. “Sex Differences in the Entry into Marriage.” *American Journal of Sociology* 92 (1): 91–109.

Goldstein, J.R., and C.T. Kenney. 2001. “Marriage Delayed or Marriage Forgone? New Cohort Forecasts of First Marriage for U.S. Women.” *American Sociological Review* 66 (4): 506–19.

Gornick, J.C., and M.K. Meyers. 2003. *Families That Work: Policies for Reconciling Parenthood and Employment*. New York: Russel Sage Foundation.

Grow, A., and J. Van Bavel. 2015. “Assortative Mating and the Reversal of Gender Inequality in Education in Europe – An Agent-Based Model.” *PLoS ONE* 10(6): e01.

Gustafsson, S. 2001. “Optimal Age at Motherhood . Theoretical and Empirical.” *Journal of Population Economics* 14 (2): 225–47.

Gustafsson, S., and S. Worku. 2006. “Assortative Mating by Education and Postponement of Couple Formation and First Birth in Britain and Sweden.” In *Education and Postponement of Maternity. Economic Analysis for Industrialized Countries*, edited by Gustafsson, S. and Kalwij, A., 259–84. Dordrecht: Springer.

Gustafsson, S., and A. Kalwij, eds. .2006. *Education and Postponement of Maternity*. Dordrecht: Springer.

Hakim, C. 2003. “A New Approach to Explaining Fertility Patterns: Preference Theory.” *Population and Development Review* 29 (3): 349–74.

Hamplova, D. 2009. “Educational Homogamy Among Married and Unmarried Couples in Europe: Does Context Matter?” *Journal of Family Issues* 30 (1): 28–52.

Happel, S.K., J.K. Hill, and S. a. Low. 1984. “An Economic Analysis of the Timing of Childbirth.” *Population Studies* 38 (2): 299–311.

Harknett, K. 2008. “Mate Availability and Unmarried Parent Relationships.” *Demography* 45 (3): 555–71.

Harkonen, J., and J. Dronkers. 2006. “Stability and Change in the Educational Gradient of Divorce. A Comparison of Seventeen Countries.” *European Sociological Review* 22 (5): 501–17.

Heckman, J.J., and J.R. Walker. 1990. “The Relationship between Wages and Income and the Timing and Spacing of Births: Evidence from Swedish Longitudinal Data.” *Econometrica* 58 (6): 1411–41.

Hobcraft, J., and K. Kiernan. 1995. “Becoming a Parent in Europe.” Welfare State Program Discussion Paper, No 116. Suntory and Toyota International Centres for Economics and Related Disciplines, London.

Hoem, J.M., and M. Kreyenfeld. 2006. “Anticipatory Analysis and Its Alternatives in Life-Course Research.” *Demographic Research* 15: 485–98.

Hoem, J.M., G. Neyer, and G. Andersson. 2006a. “Educational Attainment and Ultimate Fertility among Swedish Women Born in 1955-59.” *Demographic Research* 14: 381–404.

———. 2006b. “Education and Childlessness.” *Demographic Research* 14: 331–80.

Huinink, J., and M. Kohli. 2014. “A Life-Course Approach to Fertility.” *Demographic Research* 30: 1293–1326.

Jalovaara, M. 2012. “Socio-Economic Resources and First-Union Formation in Finland, Cohorts Born 1969-81.” *Population Studies* 66 (1): 69–85.

———. 2013. “Socioeconomic Resources and the Dissolution of Cohabitations and Marriages.” *European Journal of Population* 29 (2): 167–93.

Jalovaara, M., and A. Miettinen. 2013. “Does His Paycheck Also Matter?” *Demographic Research* 28: 881–916.

Jansen, M., and A. Liefbroer. 2006. “Couples’ Attitudes, Childbirth, and the Division of Labor.” *Journal of Family Issues*, 1487–1511.

Jensen, A.-M. 2010. “A Gender Boomerang on Fertility? How Increasing Expectations of Fatherhood May Prevent Men from Having Children.” In *Actes de La Chaire Quetelet 2010*, edited by B., Masquelier and T., Dominique, 139–56. Louvain-la-Neuve: Les Presses Universitaires de Louvain.

Joyner, K., H.E. Peters, K. Hynes, A. Sikora, J.R. Taber, and M.S. Rendall. 2012. “The Quality of Male Fertility Data in Major U.S. Surveys.” *Demography* 49 (1): 101–24.

Kalmijn, M. 1991. “Shifting Boundaries: Trends in Religious and Educational Homogamy.” *American Sociological Review* 56 (6): 786–800.

———. 1994. “Assortative Mating by Cultural and Economic Occupational Status.” *American Journal of Sociology* 100 (2): 422–52.

———. 2003. “Union Disruption in the Netherlands: Opposing Influences of Task Specialization and Assortative Mating?” *International Journal of Sociology* 33 (2): 36–64.

———. 2011. “The Influence of Men’s Income and Employment on Marriage and Cohabitation: Testing Oppenheimer's Theory in Europe.” *European Journal of Population* 27 (3): 269–93.

———. 2013. “The Educational Gradient in Marriage: A Comparison of 25 European Countries.” *Demography* 50 (4): 1499–1520.

Kiernan, K. 2004. “Unmarried Cohabitation and Parenthood in Britain and Europe.” *Law & Policy* 26 (1): 33–55.

Kleinbaum, D.G., and M. Klein. 2006. *Survival Analysis: A Self-Learning Text*. New York: Springer.

Klesment, M., A. Puur, L. Rahnu, and L. Sakkeus. 2014. “Varying Association between Education and Second Births in Europe: Comparative Analysis Based on the EU-SILC Data.” *Demographic Research* 31 (1): 813–60.

Klesment, M., and J. Van Bavel. 2015. “The Reversal of the Gender Gap in Education and Female Breadwinners in Europe.” *Families and Societies Working Paper Series* 26 (320116): 37.

Köppen, K. 2006. “Second Births in Western Germany and France.” *Demographic Research* 14: 295–330.

Kotowska, I., J. Józwiak, A. Matysiak, and A. Baranowska. 2008. “Poland: Fertility Decline as a Response to Profound Societal and Labour Market Changes?” *Demographic Research* 19: 795–854.

Koytcheva, E. 2006. “Social-Demographic Differences of Fertility and Union Formation in Bulgaria before and after the Start of the Societal Transition.” Dissertation, University of Rostock.

Kravdal, Ø. 1999. “Does Marriage Require a Stronger Economic Underpinning than Informal Cohabitation?” *Population Studies* 53 (1): 63–80.

———. 2001. “The High Fertility of College Educated Women in Norway.” *Demographic Research* 5: 187–216.

———. 2007. “Effects of Current Education on Second- and Third-Birth Rates among Norwegian Women and Men Born in 1964: Substantive Interpretations and Methodological Issues.” *Demographic Research* 17: 211–46.

Kravdal, Ø., and R.R. Rindfuss. 2008. “Changing Relationships between Education and Fertility: A Study of Women and Men Born 1940 to 1964.” *American Sociological Review* 73 (5): 854–73.

Kreyenfeld, M. 2002. “Time Squeeze, Partner Effect or Self-Selection?” *Demographic Research* 7: 15–48.

Kreyenfeld, M., and D. Konietzka. 2008. “Education and Fertility in Germany.” In *Demographic Change in Germany*, edited by I., Hamm, H.,Seitz, and M., Werding, 165–88. Springer.

Lappegård, T., and M. Rønsen. 2005. “The Multifaceted Impact of Education on Entry into Motherhood.” *European Journal of Population* 21 (1): 31–49.

Lappegård, T., M. Rønsen, and K. Skrede. 2011. “Fatherhood And Fertility.” *Fathering* 9 (1): 103–20.

Lehrer, E.L., S. Grossbard-Shechtman, and J.W. Leasure. 1996. “Comment on ‘a Theory of the Value of Children’.” *Demography* 33 (1): 133–39.

Lesthaeghe, R. 2010. “The Unfolding Story of the Second Demographic Transition.” *Population and Development Review* 36 (2): 211–51.

Lesthaeghe, R., and J. Surkyn. 1988. “Cultural Dynamics and Economic Theories of Fertility Change.” *Population and Development Review* 14 (1): 1–45.

Lesthaeghe, R., and D.J. Van De Kaa. 1986. “Twee Demografische Transities.” *Bevolking: Groei En Krimp*, 9–24.

Liefbroer, A., and M. Corijn. 1999. “Who, What, Where, and When? Specifying the Impact of Educational Attainment and Labour Force Participation on Family Formation.” *European Journal of Population* 15 (1): 45–75.

Lillard, L.A., M.J. Brien, and L.J. Waite. 1995. “Premarital Cohabitation and Subsequent Marital Dissolution: A Matter of Self-Selection?” *Demography* 32 (3): 437–57.

Lillard, L. A., and L.J. Waite. 1993. “A Joint Model of Marital Childbearing and Marital Disruption.” *Demography* 30 (4): 653–81.

Lillard, L. A., and C.W. Panis. 2003. *aML Multilevel Multiprocess Statistical Software, Version 2.0*. Los Angeles: EconWare.

Lillard, L.A. 1993. “Simultaneous Equations for Hazards Marriage Duration and Fertility Timing.” *Journal of Econometrics* 56: 189–217.

Lindberg, L.D., F.L. Sonenstein, G. Martinez, and J. Marcotte. 1998. “Completeness of Young Fathers’ Reports of Fertility.” *Journal of Economv and Social Measurement* 24: 15–23.

Lundberg, S., and R. Pollak. 1996. “Bargaining and Distribution in Marriage.” *The Journal of Economic Perspectives* 10 (4): 139–58.

Lyngstad, T., and M. Jalovaara. 2010. “A Review of the Antecedents of Union Dissolution.” *Demographic Research* 23: 257–92.

Mäenpää, E., and M. Jalovaara. 2014. “Homogamy in Socio-Economic Background and Education, and the Dissolution of Cohabiting Unions.” *Demographic Research* 30: 1769–92.

Marini, M. 1978. “The Transition to Adulthood : Sex Differences in Educational Attainment and Age at Marriage.” *American Sociological Review* 43 (4): 483–507.

Marini, M.M. 1984. “Women’s Educational Attainment and the Timing of Entry into Parenthood.” *American Sociological Review* 49 (4): 491–511.

Martín-García, T. 2009. “‘Bring Men Back In’: A Re-Examination of the Impact of Type of Education and Educational Enrolment on First Births in Spain.” *European Sociological Review* 25 (2): 199–213.

Martín-García, T., M. Seiz, and T. Castro-Martín. 2016. “Women’s and Men’s Education and Partnership Formation : Does the Field of Education Matter ?” *Families and Societies Working Paper Series* 52 (320116).

Martín-García, T., Baizan, P. 2006. “The Impact of the Type of Education and of Educational Enrolment on First Births.” *European Sociological Review* 22 (3): 259–75.

Mason, K.O. 1995. *Gender and Demographic Change: What Do We Know?* Liege: International Union for the Scientific Study of Population (IUSSP).

Matysiak, A. 2005. “The Sharing of Professional and Household Duties within Polish Couples - Preferences and Actual Choices.” *Studia Demograficzne* 1 (147): 122–54.

———. 2009. “Is Poland Really ‘Immune’ to the Spread of Cohabitation?” *Demographic Research* 21: 215–34.

Matysiak, A., M. Styrc, and D. Vignoli. 2014. “The Educational Gradient in Marital Disruption: A Meta-Analysis of European Research Findings.” *Population Studies* 68 (2): 197–215.

McDonald, P. 2000a. “Gender Equity in Theories of Fertility Transition.” *Population and Development Review* 26 (3): 427–39.

———. 2000b. “Gender Equity, Social Institutions and the Future of Fertility.” *Journal of Population Research* 17 (1): 1–16.

———. 2013. “Challenges for European Family and Fertility Research.” In *The Demography of Europe*, edited by Gerda Neyer, Gunnar Andersson, Hill Kulu, Laura Bernardi, and Christoph Bühler, 15–27. Dordrecht: Springer Netherlands.

McLanahan, S. 2004. “Diverging Destinies: How Children Are Faring Under the Second Demographic Transition.” *Demography* 41 (4): 607–27.

McLanahan, S., and C. Percheski. 2008. “Family Structure and the Reproduction of Inequalities.” *Annual Review of Sociology* 34 (1): 257–76.

McRae, S. 2003. “Constraints and Choices in Mothers’ Employment Careers: A Consideration of Hakim's Preference Theory.” *The British Journal of Sociology* 54 (3): 317–38.

Michelmore, K., and K. Musick. 2013. “Fertility Patterns of College Graduates by Field of Study, US Women Born 1960-79.” *Population Studies* 4728 (May 2014): 37–41.

Mills, M., H. Blossfeld, and E. Klijzing. 2005. “Becoming an Adult in Uncertain Times. A 14-Country Comparison of the Losers of Globalization.” In *Globalization, Uncertainty and Youth in Society*, edited by H.-P. Blossfeld, E. Klijzing, M. Mills, and K. Kurz, 423–41.

Mills, M., R.R. Rindfuss, P. McDonald, and E. te Velde. 2011. “Why Do People Postpone Parenthood? Reasons and Social Policy Incentives.” *Human Reproduction Update* 17 (6): 848–60.

Murphy, M. 2013. “Cross-National Patterns of Intergenerational Continuities in Childbearing in Developed Countries.” *Biodemography and Social Biology* 59 (2): 101–26.

Naz, G., Nilsen, Ø. A., & Vagstad, S. 2006. “Education and Completed Fertility in Norway.” In *Education and Postponement of Maternity. Economic Analysis for Industrialized Countries*, edited by S. Gustafsson, and A. Kalwij, 285–306. Dordrecht: Kluwer Academic Publishers.

Ní Bhrolcháin, M. 1992. “Age Difference Asymmetry and a Two-Sex Perspective.” *European Journal of Population* 8 (1): 23–45.

Ní Bhrolcháin, M., and É. Beaujouan. 2012. “Fertility Postponement Is Largely due to Rising Educational Enrolment.” *Population Studies: A Journal of Demography* 66 (3): 311–27.

Ní Bhrolcháin, M., and É. Beaujouan. 2013. “Education and Cohabitation in Britain: A Return to Traditional Patterns?” *Population and Development Review* 39 (September): 441–58.

Nisén, J., P. Martikainen, K. Silventoinen, and M. Myrskylä. 2014. “Age-Specific Fertility by Educational Level in the Finnish Male Cohort Born 1940–1950.” *Demographic Research* 31: 119–36.

Nitsche, N., A. Matysiak, J. Van Bavel, and D. Vignoli. 2015. “Partners’ Educational Pairings and Fertility across Europe.” *Families and Societies Working Paper Series* 38 (320116): 1–36.

Ohlsson-Wijk, S. 2015a. “Family Formation in Sweden Around the Turn of the New Millennium.” University of Stockholm.

———. 2015b. “Workplace Sex Composition and the Transition to Parenthood: Men and Women in Sweden.” *Stockholm Research Reports in Demography* 12.

Okamoto, D., and P. England. 1999. “Is There a Supply Side to Occupational Sex Segregation ?” *Sociological Perspectives* 42 (4): 557–82.

Oppenheimer, V. 1988. “A Theory of Marriage Timing.” *American Journal of Sociology* 94 (3): 563–91.

———. 1994. “Women’s Rising Employment and the Future of the Family in Industrial Societies.” *Population and Development Review* 20 (2): 293–342.

Oppenheimer, V.K. 1997. “Women’s Employment and the Gain to Marriage : The Specialization and Trading Model.” *Annual Review of Sociology* 23 (1997): 431–53.

Oppenheimer, V.K. 2003. “Cohabiting and Marriage during Young Men’s Career-Development Process.” *Demography* 40 (1): 127–49.

Oppenheimer, V.K., M. Kalmijn, and N. Lim. 1997. “Men’s Career Development and Marriage Timing during a Period of Rising Inequality.” *Demography* 34: 311–30.

Oppermann, A. 2014. “Exploring the Relationship between Educational Field and Transition to Parenthood--An Analysis of Women and Men in Western Germany.” *European Sociological Review* 0 (0): 1–22.

Panis, C. 1994. “The Piecewise Linear Spline Transformation with an Application to Age at First Marriage.” *Stata Technical Bullettin*, no. 18: 27–29.

Parsons, T. 1949. “The Social Structure of the Family.” In *The Family: Its Function and Destiny*, edited by R. Anshen, 173–201. New York: Harper.

Perelli-Harris, B., A. Berrington, C. Berghammer, R. Keizer, T. Lappegård, M. Mynarska, A. Evans, O. Isupova, A. Klaerner, and D. Vignoli. 2014. “Towards a New Understanding of Cohabitation.” *Demographic Research* 31: 1043–78.

Perelli-Harris, B., and N. Gassen. 2012. “How Similar Are Cohabitation and Marriage? Legal Approaches to Cohabitation across Western Europe.” *Population and Development Review* 38 (3): 435–67.

Perelli-Harris, B., and T.P. Gerber. 2011. “Nonmarital Childbearing in Russia: Second Demographic Transition or Pattern of Disadvantage?” *Demography* 48 (1): 317–42.

Perelli-Harris, B., M. Kreyenfeld, W. Sigle-Rushton, R. Keizer, T. Lappegård, A. Jasilioniene, C. Berghammer, and P. Di Giulio. 2012. “Changes in Union Status during the Transition to Parenthood in Eleven European Countries, 1970s to Early 2000s.” *Population Studies* 66 (2): 167–82.

Perelli-Harris, B., W. Sigle-Rushton, M. Kreyenfeld, T. Lappegård, R. Keizer, and C. Berghammer. 2010. “The Educational Gradient of Childbearing within Cohabitation in Europe.” *Population and Development Review* 36 (4): 775–801.

Prskawetz, A., T. Sobotka, I. Buber, H. Engelhardt, and R. Gisser. 2008. “Austria: Persistent Low Fertility since the Mid-1980s.” *Demographic Research* 19: 293–360.

Putter, H., M. Fiocco, and R.B. Geskus. 2007. “Tutorial in Biostatistics : Competing Risks and Multi-State Models.” *Statistics in Medicine*, no. 26: 2389–2430.

Puur, A., L.S. Oláh, M.I. Tazi-Preve, and J. Dorbritz. 2008. “Men’s Childbearing Desires and Views of the Male Role in Europe at the Dawn of the 21st Century.” *Demographic Research* 19: 1883–1912.

Quintini, G., and T. Manfredi. 2009. “Going Separate Ways? School-to-Work Transitions in the United States and Europe.” *OECD Social, Employment and Migration Working Papers*, no. 90: 1–53.

Raley, S., S.M. Bianchi, W. Wang, S. American, N. March, and S. Raley. 2012. “When Do Fathers Care ? Mothers ’ Economic Contribution and Fathers ’ Involvement in Child Care.” *American Journal of Sociology* 117 (5).

Raz-Yurovich, L. 2014. “A Transaction Cost Approach to Outsourcing by Households.” *Population and Development Review* 40 (2): 293–309.

Reimer, D., C. Noelke, and a. Kucel. 2008. “Labor Market Effects of Field of Study in Comparative Perspective: An Analysis of 22 European Countries.” *International Journal of Comparative Sociology* 49 (4-5): 233–56.

Rendall, M.S., L. Clarke, H.E. Peters, N. Ranjit, and G. Verropoulou. 1999. “Incomplete Reporting of Men’s Fertility in the United States and Britain: A Research Note.” *Demography* 36 (1): 135–44.

Rindfuss, R.R., S.P. Morgan, and G. Swicegood. 1988. *First Births in America: Changes in the Timing of Parenthood*. Berkeley, CA: University of California Press.

Salvini, S., and D. Vignoli. 2014. *Convivere o Sposarsi?* Bologna: Universale Paperbacks, Il Mulino.

Saarela, J., and F. Finnäs. 2014. “Transitions Within and From First Unions: Educational Effects in an Extended Winnowing Model.” *Marriage & Family Review* 50 (1): 35–54.

Schoen, R. 1981. “The Harmonic Mean as the Basis of a Realistic Two-Sex Marriage Model.” *Demography* 18 (2): 201–16.

Schoen, R., and R.M.. Weinick. 1993. “Partner Choice in Marriages and Cohabitations Author.” *Journal of Marriage and the Family* 55 (2): 408–14.

Schwartz, C.R. 2009. “Assortative Mating.” *Encyclopedia of Human Relationships*. Thousand Oaks, CA: Sage.

Schwartz, C.R. 2010. “Pathways to Educational Homogamy in Marital and Cohabiting Unions.” *Demography* 47 (3): 735–53.

Schwartz, C.R., and H. Han. 2014. “The Reversal of the Gender Gap in Education and Trends in Marital Dissolution.” *American Sociological Review* 79 (4): 605–29.

Schwartz, C.R.., and R.D.. Mare. 2005. “Trends in Educational Assortative Marriage from 1940 to 2003.” *Demography* 42 (4): 621–46.

Sobotka, T. 2004. “Postponement of Childbearing and Low Fertility in Europe.” University of Groningen.

———. 2008. “Overview Chapter 6: The Diverse Faces of the Second Demographic Transition in Europe.” *Demographic Research* 19: 171–224.

Sobotka, T., and E. Beaujouan. 2014. “Two Is Best? The Persistence of a Two-Child Family Ideal in Europe.” *Population and Development Review* 40 (3): 391–419.

Sobotka, T., A. Št’Astná, K. Zeman, D. Hamplová, and V. Kantorová. 2008. “Czech Republic: A Rapid Transformation of Fertility and Family Behaviour after the Collapse of State Socialism.” *Demographic Research* 19: 403–54.

Sobotka, T., and L. Toulemon. 2008. “Overview Chapter 4: Changing Family and Partnership Behaviour.” *Demographic Research* 19: 85–138.

Spéder, Z., and F. Kamarás. 2008. “Hungary: Secular Fertility Decline with Distinct Period Fluctuations.” *Demographic Research* 19: 599–664.

Stein, P., S. Willen, and M. Pavetic. 2014. “Couples’ Fertility Decision-Making.” *Demographic Research* 30: 1697–1732.

Struffolino, E., M. Studer, and A.E. Fasang. 2016. “Gender, Education, and Family Life Courses in East and West Germany: Insights from New Sequence Analysis Techniques.” *Advances in Life Course Research*. Elsevier Ltd, 0–43.

Sullivan, O., F.C. Billari, and E. Altintas. 2014. “Fathers’ Changing Contributions to Child Care and Domestic Work in Very Low-Fertility Countries: The Effect of Education.” *Journal of Family Issues*. 1-18.

Surkyn, J., and R. Lesthaeghe. 2004. “Value Orientations and the Second Demographic Transition (SDT) in Northern, Western and Southern Europe: An Update.” *Demographic Research* Special 3: 45–86.

Sweeney, M.M. 2002. “Two Decades of Family Change: The Shifting Economic Foundations of Marriage.” *American Sociological Review* 67 (1): 132–47.

Tesching, K. 2012. “Education and Fertility. Dynamic Interrelations between Women’s Educational Level, Educational Field and Fertility in Sweden.” *Stockholm University Demography Unit - Dissertation Series, No 6*.

Testa, M., L. Cavalli, and A. Rosina. 2014. “The Effect of Couple Disagreement about Child-Timing Intentions: A Parity-Specific Approach.” *Population and Development Review* 40 (March): 31–53.

Testa, M.R. 2014. “On the Positive Correlation between Education and Fertility Intentions in Europe: Individual- and Country-Level Evidence.” *Advances in Life Course Research* 21. Elsevier Ltd: 28–42.

Theunis, L., C. Schnor, D. Willaert, and J. Van Bavel. 2015. “Educational Assortative Mating and Union Stability: A Prospective Analysis Using Belgian Census and Register Data.”

In *Annual Meeting of the Population Association of America, April 30 - May 2*. San Diego, CA.

Thévenon, O., and G. Neyer. 2014. "Family Policies and Diversity in Europe: The State-of-the-Art Regarding Fertility, Work, Care, Leave, Laws and Self-Sufficiency." *Families and Societies Working Paper Series* 7 (320116).

Thomson, E. 1990. "Two in One: Structural Models of Couple Behavior." In *Family Variables: Conceptualization, Measurement and Use*, edited by C. W. Draper and A. C. Marcos, 129–42. Newbury Park, CA: Sage.

———. 1997. "Couple Childbearing Desires, Intentions, and Births." *Demography* 34 (3): 343–54.

Thomson, E., E. McDonald, and L. Bumpass. 1990. "Fertility Desires and Fertility: Hers, His, and Theirs." *Demography* 27 (4): 579–88.

Thomson, E., M. Winkler-Dworak, M. Spielauer, and A. Prskawetz. 2012. "Union Instability as an Engine of Fertility? A Microsimulation Model for France." *Demography* 49 (1): 175–95.

Torr, B., and S. Short. 2004. "Second Births and the Second Shift: A Research Note on Gender Equity and Fertility." *Population and Development Review* 30 (1): 109–30.

Toulemon, L., and E. Lapierre-Adamcyck. 200AD. "Demographic Patterns of Motherhood and Fatherhood in France." In *Fertility and the Male Life-Cycle in the Era of Fertility Decline*, edited by C. Bledsoe, S. Lerner, and J.I. Guyer, 264–301. New York: Oxford University Press.

Tragaki, A., and C. Bagavos. 2014. "Male Fertility in Greece : Trends and Differentials by Education Level and Employment Status." *Demographic Research* 31: 137–60.

Trimarchi, A., C. Schnor, and J. Van Bavel. n.d. "Educational Assortative Mating and Nonmarital Childbearing within Cohabitation-Evidence from Four European Contexts." In *Partnership Relations from Adolescence to Adulthood. Psychological and Sociological Perspectives*, edited by S. Walper, E.-V. Wendt, and F. Schmahl. Springer.

Trimarchi, A., and J. Van Bavel. 2015. "Education and the Transition to Fatherhood in Europe : The Role of Selection into Unions." In *Annual Meeting of the Population Association of America, April 30 - May 2*. San Diego, CA.

UNESCO .2014. "ISCED fields of education and training 2013 (ISCED-F 2013)". http://www.uis.unesco.org/Education/Pages/international-standard-classification-of-education.aspx Accessed September, 14, 2015.

Van Bavel, J. 2010. "Choice of Study Discipline and the Postponement of Motherhood in Europe: The Impact of Expected Earnings, Gender Composition, and Family Attitudes." *Demography* 47 (2): 439–58.

———. 2012. “The Reversal of Gender Inequality in Education, Union Formation and Fertility in Europe.” *Vienna Yearbook of Population Research*, no. June 2012: 1–40.

Van Bavel, J., M. Jansen, and B. Wijckmans. 2012. “Has Divorce Become a Pro-Natal Force in Europe at the Turn of the 21st Century?” *Population Research and Policy Review* 31 (5): 751–75.

Van Bavel, J., and J. Rózańska-Putek. 2010. “Second Birth Rates across Europe: Interactions between Women’s Level of Education and Child Care Enrolment.” *Vienna Yearbook of Population Research* 8 (1): 107–38.

Van De Kaa, D.J. 1987. “Europe’s Second Demographic Transition.” *Population Bulletin* 42 (1): 1–59.

Van de Werfhorst, H.G. 2001. “Field of Study and Social Inequality. Four Types of Educational Resources in the Process of Stratification in the Netherlands.” Dissertation, Catholic University of Nijmegen.

Vaupel, J.W., and A.I. Yashin. 1985. “Heterogeneity’s Ruses: Some Surprising Effects of Selection on Population Dynamics.” *The American Statistician* 39 (3): 176–85.

Vergauwen, J., J. Wood, D. De Wachter, and K. Neels. 2015. “Quality of Demographic Data in GGS Wave 1.” *Demographic Research* 32: 723–74.

Vignoli, D., S. Drefahl, and G. De Santis. 2012. “Whose Job Instability Affects the Likelihood of Becoming a Parent in Italy? A Tale of Two Partners.” *Demographic Research* 26: 41–62.

Vikat, A., Z. Spéder, G. Beets, F. Billari, C. Bühler, A. Desesquelles, T. Fokkema, et al. 2007. “Generations and Gender Survey (GGS).” *Demographic Research* 17: 389–440.

Vincent-Lancrin, S. 2008. “The Reversal of Gender Inequalities in Higher Education: An on-Going Trend.” *Higher Education to 2030: Demography* (Vol. 1, pp. 265–298). Paris: OECD.

Voas, D. 2003. “Conflicting Preferences: A Reason Fertility Tends to Be Too High or Too Low.” *Population and Development Review* 29 (4): 627–46.

Willekens, F. 2014. *Multistate Analysis of Life Histories with R*. Springer.

Winkler-Dworak, M., and L. Toulemon. 2007. “Gender Differences in the Transition to Adulthood in France: Is There Convergence over the Recent Period?” *European Journal of Population* 23 (3).

Wood, J., K. Neels, and T. Kil. 2014. “The Educational Gradient of Childlessness and Cohort Parity Progression in 14 Low Fertility Countries.” *Demographic Research* 31 (1): 1365–1416.

Wooldrige, J. 2010. *Econometric Analysis of Cross Section and Panel Data*. 2nd Edition. Cambridge MA: MIT Press.

Wu, Z. 1996. "Childbearing in Cohabitational Relationships." *Journal of Marriage and the Family* 58 (2): 281–92.

Xie, Y., J.M. Raymo, K. Goyette, and A. Thornton. 2003. "Economic Potential and Entry into Marriage and Cohabitation." *Demography* 40 (2): 351–67.

Yu, W. 2015. "Placing Families in Context: Challenges for Cross-National Family Research." *Journal of Marriage and Family* 77: 23–39.

Zuo, J. 2004. "Shifting the Breadwinning Boundary: The Role of Men's Breadwinner Status and Their Gender Ideologies." *Journal of Family Issues* 25 (6): 811–32.

Summary

The link between education and fertility has been a long-standing research interest in family demography, since education is considered an important indirect determinant of fertility behavior. Empirical evidence on the relationship between education and fertility, however, is mostly based on findings concerning women's life courses. Fertility studies have disregarded the role of male partners and how the process of selecting a mate with given education-specific characteristics may affect fertility. This is a major drawback for at least two reasons. First, the majority of births occurs within unions. Second, women, and highly educated women in particular, tend to increasingly require men's active involvement in household activities to engage in motherhood. As a result, the timing and number of children is not confined to the decision of one of the partners, but it depends on both partners, who increasingly become more equally involved in the process of parenthood.

Using a multi-country design, this dissertation aims to fill these gaps by looking at two under-researched topics in the field of family demography: men's and couple's fertility. The dyadic articulation of the project is based on two fundamental research objectives: the first one is to uncover the role of men's education in the transition to fatherhood and higher order births (Chapters 1 and 2), whereas the second one is to examine the role of the interaction between partners' educational characteristics on fertility (Chapters 3 and 4). We argue that partnership formation in general, and educational assortative mating in particular, play a role in shaping fertility, both for women and men.

The first part of the thesis shows that there is a consistent positive effect of men's education on the transition to fatherhood, but it operates chiefly through selection into union. Failing to account for this selection process leads to a major underestimation of the salience of education for the transition to fatherhood. Moreover, we find that gender differences in the effect of education on fertility mainly show up with regard to the transition to parenthood. In contrast with predictions from micro-economic theories of the family, effects on higher order births appear to be more similar between genders: we find a positive effect of educational attainment on the transition to second birth but a negative effect of the earning potential indicated by the degree obtained, both for women and men. Overall, in line with the argument put forward in this thesis, a key variable to understand the results is partnership status along with partner's education, which gives the motivation for the couple-level analyses that follow in the second part of the dissertation.

Findings from the couple-level analyses suggest that traditional pairings, characterized by an imbalance of education and earning potential in favor of the man, are more conducive to fertility than non-traditional pairings, i.e., characterized by an imbalance of education and earning potential in favor of the woman. However, highly educated women partnered with highly educated men tend to have a higher second birth rate compared to highly educated women who partnered with a man lower educated than themselves. Next, we found that the presence of at least one highly educated partner lowers the rate of non-marital first births, relative to first childbearing within marriage. Strikingly, it does not matter whether it is he or she who has the highest level of education.

Overall, these results highlight that the effect of men's and women's own education on fertility also depend on their partners' education. This, eventually, will have consequences for the reproduction of societal inequalities given that fertility outcomes differ by patterns of educational assortative mating and across contexts. Future research should focus on the role of contextual factors in shaping the intersection between gender roles, education and fertility.

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44. HUYPENS, J., *De plaatselijke nieuwsfabriek. Regionaal nieuws. Analyse van inhoud en structuur in de krant.* 494 blz.

45. CEULEMANS, M.J., *Women and Mass Media: a feminist perpective. A review of the research to date the image and status of women in American mass media.* 1980, 541 blz. + bijlagen.

46. VANDEKERCKHOVE, L., *Gemaakt van asse. Een sociologische studie van de westerse somatische kultuur.* 1980, 383 blz.

47. MIN, J.K., *Political Development in Korea, 1945-1972.* 1980, 2 delen, 466 blz.

48. MASUI, M., *Ongehuwd moeder. Sociologische analyse van een wordingsproces.* 1980, 257 blz.

49. LEDOUX, M., *Op zoek naar de rest ...; Genealogische lezing van het psychiatrisch discours.* 1981, 511 blz.

50. VEYS, D., *De generatie-sterftetafels in België.* 1981, 3 delen, 326 blz. + bijlagen.

51. TACQ, J., *Kausaliteit in sociologisch onderzoek. Een beoordeling van de zgn. 'causal modeling'-technieken in het licht van verschillende wijsgerige opvattingen over kausaliteit.* 1981, 337 blz.

52. NKUNDABAGENZI, F., *Le système politique et son environnement. Contribution à l'étude de leur interaction à partir du cas des pays est-africains : le Kenya et la Tanzanie.* 1981, 348 blz.

53. GOOSSENS, L., *Het sociaal huisvestingsbeleid in België. Een historisch-sociologische analyse van de maatschappelijke probleembehandeling op het gebied van het wonen.* 1982, 3 delen.

54. SCHEPERS, R., *De opkomst van het Belgisch medisch beroep. De evolutie van de wetgeving en de beroepsorganisatie in de 19de eeuw.* 1983, 553 blz.

55. VANSTEENKISTE, J., *Bejaardzijn als maatschappelijk gebeuren.* 1983, 166 blz.

56. MATTHIJS, K., *Zelfmoord en zelfmoordpoging.* 1983, 3 delen, 464 blz.

57. CHUNG-WON, Choue, *Peaceful Unification of Korea. Towards Korean Integration.* 1984, 338 blz.

58. PEETERS, R., *Ziekte en gezondheid bij Marokkaanse immigranten.* 1983, 349 blz.

59. HESLING, W., *Retorica en film. Een onderzoek naar de structuur en functie van klassieke overtuigingsstrategieën in fictionele, audiovisuele teksten.* 1985, 515 blz.

60. WELLEN, J., *Van probleem tot hulpverlening. Een exploratie van de betrekkingen tussen huisartsen en ambulante geestelijke gezondheidszorg in Vlaanderen.* 1984, 476 blz.

61. LOOSVELDT, G., *De effecten van een interviewtraining op de kwaliteit van gegevens bekomen via het survey-interview.* 1985, 311 blz. + bijlagen.

62. FOETS, M., *Ziekte en gezondheidsgedrag : de ontwikkeling van de sociologische theorievorming en van het sociologisch onderzoek.* 1985, 339 blz.

63. BRANCKAERTS, J., *Zelfhulporganisaties. Literatuuranalyse en explorerend onderzoek in Vlaanderen.* 1985.

64. DE GROOFF, D., *De elektronische krant. Een onderzoek naar de mogelijkheden van nieuwsverspreiding via elektronische tekstmedia en naar de mogelijke gevolgen daarvan voor de krant als bedrijf en als massamedium.* 1986, 568 blz.

65. VERMEULEN, D., *De maatschappelijke beheersingsprocessen inzake de sociaal-culturele sector in Vlaanderen. Een sociologische studie van de "verzuiling", de professionalisering en het overheidsbeleid.* 1983, 447 blz.

66. OTSHOMANPITA, Aloki, *Administration locale et développement au Zaïre. Critiques et perspectives de l'organisation politico-administrative à partir du cas de la zone de Lodja.* 1988, 507 blz.

67. SERVAES, J., *Communicatie en ontwikkeling. Een verkennende literatuurstudie naar de mogelijkheden van een communicatiebeleid voor ontwikkelingslanden.* 1987, 364 blz.

68. HELLEMANS, G., *Verzuiling. Een historische en vergelijkende analyse.* 1989, 302 blz.

II. NIEUWE REEKS VAN DOCTORATEN IN DE SOCIALE WETENSCHAPPEN EN IN DE SOCIALE EN CULTURELE ANTROPOLOGIE

1. LIU BOLONG, *Western Europe - China. A comparative analysis of the foreign policies of the European Community, Great Britain and Belgium towards China (1970-1986).* Leuven, Departement Politieke Wetenschappen, 1988, 335 blz.

2. EERDEKENS, J., *Chronische ziekte en rolverandering. Een sociologisch onderzoek bij M.S.-patiënten.* Leuven, Acco, 1989, 164 blz. + bijlagen.

3. HOUBEN, P., *Formele beslissingsmodellen en speltheorie met toepassingen en onderzoek naar activiteiten en uitgaven van locale welzijnsinstellingen en coalities.* Leuven, Departement Sociologie, 1988, 631 blz. (5 delen).

4. HOOGHE, L., *Separatisme. Conflict tussen twee projecten voor natievorming. Een onderzoek op basis van drie succesvolle separatismen.* Leuven, Departement Politieke Wetenschappen, 1989, 451 blz. + bijlagen.

5. SWYNGEDOUW, M., *De keuze van de kiezer. Naar een verbetering van de schattingen van verschuivingen en partijvoorkeur bij opeenvolgende verkiezingen en peilingen.* Leuven, Sociologisch Onderzoeksinstituut, 1989, 333 blz.

6. BOUCKAERT, G., *Productiviteit in de overheid.* Leuven, Vervolmakingscentrum voor Overheidsbeleid en Bestuur, 1990, 394 blz.

7. RUEBENS, M., *Sociologie van het alledaagse leven.* Leuven, Acco, 1990, 266 blz.

8. HONDEGHEM, A., *De loopbaan van de ambtenaar. Tussen droom en werkelijkheid.* Leuven, Vervolmakingscentrum voor Overheidsbeleid en Bestuur, 1990, 498 blz. + bijlage.

9. WINNUBST, M., *Wetenschapspopularisering in Vlaanderen. Profiel, zelfbeeld en werkwijze van de Vlaamse wetenschapsjournalist.* Leuven, Departement Communicatiewetenschap, 1990.

10. LAERMANS, R., *In de greep van de "moderne tijd". Modernisering en verzuiling, individualisering en het naoorlogse publieke discours van de ACW-vormingsorganisaties : een proeve tot cultuursociologische duiding*. Leuven, Garant, 1992.

11. LUYTEN, D., *OCMW en Armenzorg. Een sociologische studie van de sociale grenzen van het recht op bijstand.* Leuven, S.O.I. Departement Sociologie, 1993, 487 blz.

12. VAN DONINCK, B., *De landbouwcoöperatie in Zimbabwe. Bouwsteen van een nieuwe samenleving ?* Grimbergen, vzw Belgium-Zimbabwe Friendship Association, 1993. 331 blz.

13. OPDEBEECK, S., *Afhankelijkheid en het beëindigen van partnergeweld*. Leuven, Garant, 1993. 299 blz. + bijlagen.

14. DELHAYE, C., *Mode geleefd en gedragen*. Leuven, Acco, 1993, 228 blz.

15. MADDENS, B., *Kiesgedrag en partijstrategie*. Leuven, Departement Politieke Wetenschappen, Afdeling Politologie, K.U.Leuven, 1994, 453 blz.

16. DE WIT, H., *Cijfers en hun achterliggende realiteit*. *De MTMM-kwaliteitsparameters op hun kwaliteit onderzocht*. Leuven, Departement Sociologie, K.U.Leuven, 1994, 241 blz.

17. DEVELTERE, P., *Co-operation and development with special reference to the experience of the Commonwealth Carribean*. Leuven, Acco, 1994, 241 blz.

18. WALGRAVE, S., *Tussen loyauteit en selectiviteit. Een sociologisch onderzoek naar de ambivalente verhouding tussen nieuwe sociale bewegingen en groene partij in Vlaanderen*. Leuven, Garant, 1994, 361 blz.

19. CASIER, T., *Over oude en nieuwe mythen. Ideologische achtergronden en repercussies van de politieke omwentelingen in Centraal- en Oost-Europa sinds 1985*. Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 1994, 365 blz.

20. DE RYNCK, F., *Streekontwikkeling in Vlaanderen. Besturingsverhoudingen en beleidsnetwerken in bovenlokale ruimtes*. Leuven, Departement Politieke Wetenschappen, Afdeling Bestuurswetenschap, K.U.Leuven, 1995, 432 blz.

21. DEVOS, G., *De flexibilisering van het secundair onderwijs in Vlaanderen. Een organisatie-sociologische studie van macht en institutionalisering*. Leuven, Acco, 1995, 447 blz.

22. VAN TRIER, W., *Everyone A King? An investigation into the meaning and significance of the debate on basic incomes with special references to three episodes from the British inter-War experience*. Leuven, Departement Sociologie, K.U.Leuven, 1995, vi+501 blz.

23. SELS, L., *De overheid viert de teugels. De effecten op organisatie en personeelsbeleid in de autonome overheidsbedrijven*. Leuven, Acco, 1995, 454 blz.

24. HONG, K.J., *The C.S.C.E. Security Regime Formation: From Helsinky to Budapest*. Leuven, Acco, 1996, 350 blz.

25. RAMEZANZADEH, A., *Internal and international dynamics of ethnic conflict. The Case of Iran*. Leuven, Acco, 1996, 273 blz.

26. HUYSMANS, J., *Making/Unmaking European Disorder. Meta-Theoretical, Theoretical and Empirical Questions of Military Stability after the Cold War*. Leuven, Acco, 1996, 250 blz.

27. VAN DEN BULCK J., *Kijkbuiskennis. De rol van televisie in de sociale en cognitieve constructie van de realiteit*. Leuven, Acco, 1996, 242 blz.

28. JEMADU Aleksius, *Sustainable Forest Management in the Context of Multi-level and Multi-actor Policy Processes*. Leuven, Departement Politieke Wetenschappen, Afdeling Bestuur en Overheidsmanagement, K.U.Leuven, 1996, 310 blz.

29. HENDRAWAN Sanerya, *Reform and Modernization of State Enterprises. The Case of Indonesia*. Leuven, Departement Politieke Wetenschappen, Afdeling Bestuur en Overheidsmanagement, K.U.Leuven, 1996, 372 blz.

30. MUIJS Roland Daniël, *Self, School and Media: A Longitudinal Study of Media Use, Self-Concept, School Achievement and Peer Relations among Primary School Children*. Leuven, Departement Communicatiewetenschap, K.U.Leuven, 1997, 316 blz.

31. WAEGE Hans, *Vertogen over de relatie tussen individu en gemeenschap.* Leuven, Acco, 1997, 382 blz.

32. FIERS Stefaan, *Partijvoorzitters in België of 'Le parti, c'est moi'?* Leuven, Acco, 1998, 419 blz.

33. SAMOY Erik, *Ongeschikt of ongewenst? Een halve eeuw arbeidsmarktbeleid voor gehandicapten*. Leuven, Departement Sociologie, K.U.Leuven, 1998, 640 blz.

34. KEUKELEIRE Stephan, *Het Gemeenschappelijk Buitenlands en Veiligheidsbeleid (GBVB): het buitenlands beleid van de Europese Unie op een dwaalspoor*. Leuven, Departement Politieke Wetenschappen, Afdeling Internationale Betrekkingen, K.U.Leuven, 1998, 452 blz.

35. VERLINDEN Ann, *Het ongewone alledaagse: over zwarte katten, horoscopen, miraculeuze genezingen en andere geloofselementen en praktijken. Een sociologie van het zogenaamde bijgeloof*. Leuven, Departement Sociologie, K.U.Leuven, 1999, 387 blz. + bijlagen.

36. CARTON Ann, *Een interviewernetwerk: uitwerking van een evaluatieprocedure voor interviewers*. Leuven, Departement Sociologie, 1999, 379 blz. + bijlagen.

37. WANG Wan-Li, *Undestanding Taiwan-EU Relations: An Analysis of the Years from 1958 to 1998*. Leuven, Departement Politieke Wetenschappen, Afdeling Internationale Betrekkingen, K.U.Leuven, 1999, 326 blz. + bijlagen.

38. WALRAVE Michel, *Direct Marketing en Privacy. De verhouding tussen direct marketingscommunicatie en de bescherming van de informationele en de relationele privacy van consumenten*. Leuven, Departement Communicatiewetenschap, K.U.Leuven, 1999, 480 blz. + bijlagen.

39. KOCHUYT Thierry, *Over een ondercultuur. Een cultuursociologische studie naar de relatieve deprivatie van arme gezinnen*. Leuven, Departement Sociologie, K.U.Leuven, 1999, 386 blz. + bijlagen.

40. WETS Johan, *Waarom onderweg? Een analyse van de oorzaken van grootschalige migratie- en vluchtelingenstromen.* Leuven, Departement Politieke Wetenschappen, Afdeling Internationale Betrekkingen, K.U.Leuven, 1999, 321 blz. + bijlagen.

41. VAN HOOTEGEM Geert, *De draaglijke traagheid van het management. Productie- en Personeelsbeleid in de industrie.* Leuven, Departement Sociologie, K.U.Leuven, 1999, 471 blz. + bijlagen.

42. VANDEBOSCH Heidi, *Een geboeid publiek? Het gebruik van massamedia door gedetineerden*. Leuven, Departement Communicatiewetenschap, K.U.Leuven, 1999, 375 blz. + bijlagen.

43. VAN HOVE Hildegard, *De weg naar binnen. Spiritualiteit en zelfontplooiing*. Leuven, Departement Sociologie, K.U.Leuven, 2000, 369 blz. + bijlagen.

44. HUYS Rik, *Uit de band? De structuur van arbeidsverdeling in de Belgische autoassemblagebedrijven.* Leuven, Departement Sociologie, K.U.Leuven, 2000, 464 blz. + bijlagen.

45. VAN RUYSSEVELDT Joris, *Het belang van overleg. Voorwaarden voor macroresponsieve CAO-onderhandelingen in de marktsector.* Leuven, Departement Sociologie, K.U.Leuven, 2000, 349 blz. + bijlagen.

46. DEPAUW Sam, *Cohesie in de parlementsfracties van de regeringsmeerderheid. Een vergelijkend onderzoek in België, Frankrijk en het Verenigd Koninkrijk (1987-97).* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2000, 510 blz. + bijlagen.

47. BEYERS Jan, *Het maatschappelijk draagvlak van het Europees beleid en het einde van de permissieve consensus. Een empirisch onderzoek over politiek handelen in een meerlagig politiek stelsel.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2000, 269 blz. + bijlagen.

48. VAN DEN BULCK Hilde, *De rol van de publieke omroep in het project van de moderniteit. Een analyse van de bijdrage van de Vlaamse publieke televisie tot de creatie van een nationale cultuur en identiteit (1953-1973).* Leuven, Departement Communicatiewetenschap, K.U.Leuven, 2000, 329 blz. + bijlagen.

49. STEEN Trui, *Krachtlijnen voor een nieuw personeelsbeleid in de Vlaamse gemeenten. Een studie naar de sturing en implementatie van veranderingsprocessen bij de overheid.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2000, 340 blz. + bijlagen.

50. PICKERY Jan, *Applications of Multilevel Analysis in Survey Data Quality Research. Random Coefficient Models for Respondent and Interviewer Effects.* Leuven, Departement Sociologie, K.U.Leuven, 2000, 200 blz. + bijlagen.

51. DECLERCQ Aniana (Anja), *De complexe zoektocht tussen orde en chaos. Een sociologische studie naar de differentiatie in de institutionele zorgregimes voor dementerende ouderen.* Leuven, Departement Sociologie, K.U.Leuven, 2000, 260 blz. + bijlagen.

52. VERSCHRAEGEN Gert, *De maatschappij zonder eigenschappen. Systeemtheorie, sociale differentiatie en moraal.* Leuven, Departement Sociologie, K.U.Leuven, 2000, 256 blz. + bijlagen.

53. DWIKARDANA Sapta, *The Political Economy of Development and Industrial Relations in Indonesia under the New Order Government.* Leuven, Departement Sociologie, K.U.Leuven, 2001, 315 blz. + bijlagen.

54. SAUER Tom, *Nuclear Inertia. US Nuclear Weapons Policy after the Cold War (1990-2000).* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2001, 358 blz. + bijlagen.

55. HAJNAL Istvan, *Classificatie in de sociale wetenschappen. Een evaluatie van de nauwkeurigheid van een aantal clusteranalysemethoden door middel van simulaties.* Leuven, Departement Sociologie, K.U.Leuven, 2001, 340 blz. + bijlagen.

56. VAN MEERBEECK Anne, *Het doopsel: een familieritueel. Een sociologische analyse van de betekenissen van dopen in Vlaanderen.* Leuven, Departement Sociologie, K.U.Leuven, 2001, 338 blz. + bijlagen.

57. DE PRINS Peggy, *Zorgen om zorg(arbeid). Een vergelijkend onderzoek naar oorzaken van stress en maatzorg in Vlaamse rusthuizen.* Leuven, Departement Sociologie, K.U.Leuven, 2001, 363 blz. + bijlagen.

58. VAN BAVEL Jan, *Demografische reproductie en sociale evolutie: geboortebeperking in Leuven 1840-1910.* Leuven, Departement Sociologie, K.U.Leuven, 2001, 362 blz. + bijlagen.

59. PRINSLOO Riana, *Subnationalism in a Cleavaged Society with Reference to the Flemish Movement since 1945.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2001, 265 blz. + bijlagen.

60. DE LA HAYE Jos, *Missed Opportunities in Conflict Management. The Case of Bosnia-Herzegovina (1987-1996).* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2001, 283 blz. + bijlagen.

61. ROMMEL Ward, *Heeft de sociologie nood aan Darwin? Op zoek naar de verhouding tussen evolutiepsychologie en sociologie.* Leuven, Departement Sociologie, K.U.Leuven, 2002, 287 blz. + bijlagen.

62. VERVLIET Chris, *Vergelijking tussen Duits en Belgisch federalisme, ter toetsing van een neofunctionalistisch verklaringsmodel voor bevoegdheidsverschuivingen tussen nationale en subnationale overheden: een analyse in het economisch beleidsdomein.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2002, 265 blz. + bijlagen.

63. DHOEST Alexander, *De verbeelde gemeenschap: Vlaamse tv-fictie en de constructie van een nationale identiteit.* Leuven, Departement Communicatiewetenschap, K.U.Leuven, 2002, 384 blz. + bijlagen.

64. VAN REETH Wouter, *The Bearable Lightness of Budgeting. The Uneven Implementation of Performance Oriented Budget Reform Across Agencies.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2002, 380 blz. + bijlagen.

65. CAMBRé Bart, *De relatie tussen religiositeit en etnocentrisme. Een contextuele benadering met cross-culturele data.* Leuven, Departement Sociologie, K.U.Leuven, 2002, 257 blz. + bijlagen.

66. SCHEERS Joris, *Koffie en het aroma van de stad. Tropische (re-)productiestructuren in ruimtelijk perspectief. Casus centrale kustvlakte van Ecuador.* Leuven, Departement Sociologie, K.U.Leuven, 2002, 294 blz. + bijlagen.

67. VAN ROMPAEY Veerle, *Media on / Family off? An integrated quantitative and qualitative investigation into the implications of Information and Communication Technologies (ICT) for family life.* Leuven, Departement Communicatiewetenschap, K.U.Leuven, 2002, 232 blz. + bijlagen.

68. VERMEERSCH Peter, *Roma and the Politics of Ethnicity in Central Europe. A Comparative Study of Ethnic Minority Mobilisation in the Czech Republic, Hungary and Slovakia in the 1990s.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2002, 317 blz. + bijlagen.

69. GIELEN Pascal, *Pleidooi voor een symmetrische kunstsociologie. Een sociologische analyse van artistieke selectieprocessen in de sectoren van de hedendaagse dans en de beeldende kunst in Vlaanderen.* Leuven, Departement Sociologie, K.U.Leuven, 2002, 355 blz. + bijlagen.

70. VERHOEST Koen, *Resultaatgericht verzelfstandigen. Een analyse vanuit een verruimd principaal-agent perspectief.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2002, 352 blz. + bijlagen.

71. LEFèVRE Pascal, *Willy Vandersteens Suske en Wiske in de krant (1945-1971). Een theoretisch kader voor een vormelijke analyse van strips.* Leuven, Departement Communicatiewetenschap, K.U.Leuven, 2003, 186 blz. (A3) + bijlagen.

72. WELKENHUYSEN-GYBELS Jerry, *The Detection of Differential Item Functioning in Likert Score Items.* Leuven, Departement Sociologie, K.U.Leuven, 2003, 222 blz. + bijlagen.

73. VAN DE PUTTE Bart, *Het belang van de toegeschreven positie in een moderniserende wereld. Partnerkeuze in 19de-eeuwse Vlaamse steden (Leuven, Aalst en Gent).* Leuven, Departement Sociologie, K.U.Leuven, 2003, 425 blz. + bijlagen.

74. HUSTINX Lesley, *Reflexive modernity and styles of volunteering: The case of the Flemish Red Cross volunteers.* Leuven, Departement Sociologie, K.U.Leuven, 2003, 363 blz. + bijlagen.

75. BEKE Wouter, *De Christelijke Volkspartij tussen 1945 en 1968. Breuklijnen en pacificatiemechanismen in een catch-allpartij.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2004, 423 blz. + bijlagen.

76. WAYENBERG Ellen, *Vernieuwingen in de Vlaamse centrale - lokale verhoudingen: op weg naar partnerschap? Een kwalitatieve studie van de totstandkoming en uitvoering van het sociale impulsbeleid.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2004, 449 blz. + bijlagen.

77. MAESSCHALCK Jeroen, *Towards a Public Administration Theory on Public Servants' Ethics. A Comparative Study.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2004, 374 blz. + bijlagen.

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80. WAUTERS Bram, *Verkiezingen in organisaties.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2004, 707 blz. + bijlagen.

81. VANDERLEYDEN Lieve, *Het Belgische/Vlaamse ouderenbeleid in de periode 1970-1999 gewikt en gewogen.* Leuven, Departement Sociologie, K.U.Leuven, 2004, 386 blz. + bijlagen.

82. HERMANS Koen, *De actieve welvaartsstaat in werking. Een sociologische studie naar de implementatie van het activeringsbeleid op de werkvloer van de Vlaamse OCMW's*. Leuven, Departement Sociologie, K.U.Leuven, 2005, 300 blz. + bijlagen.

83. BEVIGLIA ZAMPETTI Americo, *The Notion of 'Fairness' in International Trade Relations: the US Perspective*. Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2005, 253 blz. + bijlagen.

84. ENGELEN Leen, *De verbeelding van de Eerste Wereldoorlog in de Belgische speelfilm (1913-1939).* Leuven, Departement Communicatiewetenschap, K.U.Leuven, 2005, 290 blz. + bijlagen.

85. VANDER WEYDEN Patrick, *Effecten van kiessystemen op partijsystemen in nieuwe democratieën.* Leuven, Departement Sociologie, K.U.Leuven/K.U.Brussel, 2005, 320 blz. + bijlagen.

86. VAN HECKE Steven, *Christen-democraten en conservatieven in de Europese Volkspartij. Ideologische verschillen, nationale tegenstellingen en transnationale conflicten.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2005, 306 blz. + bijlagen.

87. VAN DEN VONDER Kurt, *"The Front Page" in Hollywood. Een geïntegreerde historisch-poëticale analyse.* Leuven, Departement Communicatiewetenschap, K.U.Leuven, 2005, 517 blz. + bijlagen.

88. VAN DEN TROOST Ann, *Marriage in Motion. A Study on the Social Context and Processes of Marital Satisfaction.* Leuven, Departement Sociologie, K.U.Leuven/R.U.Nijmegen, Nederland, 2005, 319 blz. + bijlagen.

89. ERTUGAL Ebru, *Prospects for regional governance in Turkey on the road to EU membership: Comparison of three regions.* Leuven, Departement Politieke Wetenschappen, K.U.Leuven, 2005, 384 blz. + bijlagen.

90. BENIJTS Tim, *De keuze van beleidsinstrumenten. Een vergelijkend onderzoek naar duurzaam sparen en beleggen in België en Nederland.* Leuven, Onderzoekseenheid: Instituut voor de Overheid [IO], K.U.Leuven, 2005, 501 blz. + bijlagen

91. MOLLICA Marcello, *The Management of Death and the Dynamics of an Ethnic Conflict: The Case of the 1980-81 Irish National Liberation Army (INLA) Hunger Strikes in Northern Ireland.* Leuven, Onderzoekseenheid: Instituut voor Internationaal en Europees Beleid [IIEB], K.U.Leuven, 2005, 168 blz. + bijlagen

92. HEERWEGH Dirk, *Web surveys. Explaining and reducing unit nonresponse, item nonresponse and partial nonresponse.* Leuven, Onderzoekseenheid: Centrum voor Sociologie [CeSO], K.U.Leuven, 2005, 350 blz. + bijlagen

93. GELDERS David (Dave), *Communicatie over nog niet aanvaard beleid: een uitdaging voor de overheid?* Leuven, Onderzoekseenheid: School voor Massacommunicatieresearch [SMC], K.U.Leuven, 2005, (Boekdeel 1 en 2) 502 blz. + bijlagenboek

94. PUT Vital, *Normen in performance audits van rekenkamers. Een casestudie bij de Algemene Rekenkamer en het National Audit Office.* Leuven, Onderzoekseenheid: Instituut voor de Overheid [IO], K.U.Leuven, 2005, 209 blz. + bijlagen

95. MINNEBO Jurgen, *Trauma recovery in victims of crime: the role of television use.* Leuven, Onderzoekseenheid: School voor Massacommunicatieresearch [SMC], K.U.Leuven, 2006, 187 blz. + bijlagen

96. VAN DOOREN Wouter, *Performance Measurement in the Flemish Public Sector: A Supply and Demand Approach.* Leuven, Onderzoekseenheid: Instituut voor de Overheid [IO], K.U.Leuven, 2006, 245 blz. + bijlagen

97. GIJSELINCKX Caroline, *Kritisch Realisme en Sociologisch Onderzoek. Een analyse aan de hand van studies naar socialisatie in multi-etnische samenlevingen.* Leuven, Onderzoekseenheid: Centrum voor Sociologie [CeSO], K.U.Leuven, 2006, 305 blz. + bijlagen

98. ACKAERT Johan, *De burgemeestersfunctie in België. Analyse van haar legitimering en van de bestaande rolpatronen en conflicten.* Leuven, Onderzoekseenheid: Instituut voor de Overheid [IO], K.U.Leuven, 2006, 289 blz. + bijlagen

99. VLEMINCKX Koen, *Towards a New Certainty: A Study into the Recalibration of the Northern-Tier Conservative Welfare States from an Active Citizens Perspective.* Leuven, Onderzoekseenheid: Centrum voor Sociologie [CeSO], K.U.Leuven, 2006, 381 blz. + bijlagen

100. VIZI Balázs, *Hungarian Minority Policy and European Union Membership. An Interpretation of Minority Protection Conditionality in EU Enlargement.* Leuven, Onderzoekseenheid: Insituut voor Internationaal en Europees Beleid [IIEB], K.U.Leuven, 2006, 227 blz. + bijlagen

101. GEERARDYN Aagje, *Het goede doel als thema in de externe communicatie. Bedrijfscommunicatie met een sociaal gezicht?* Leuven, Onderzoekseenheid: School voor Massacommunicatieresearch [SMC], K.U.Leuven, 2006, 272 blz. + bijlagen

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103. DOM Leen, *Ouders en scholen: partnerschap of (ongelijke) strijd? Een kwalitatief onderzoek naar de relatie tussen ouders en scholen in het lager onderwijs.* Leuven, Onderzoekseenheid: Centrum voor Sociologisch Onderzoek [CeSO], K.U.Leuven, 2006, 372 blz. + bijlagen

104. NOPPE Jo, *Van kiesprogramma tot regeerakkoord. De beleidsonderhandelingen tussen de politieke partijen bij de vorming van de Belgische federale regering in 1991-1992 en in 2003.* Leuven, Onderzoekseenheid: Centrum voor Politicologie [CePO], K.U.Leuven, 2006, 364 blz. + bijlagen

105. YASUTOMI Atsushi, *Alliance Enlargement: An Analysis of the NATO Experience.* Leuven, Onderzoekseenheid: Instituut voor Internationaal en Europees Beleid [IIEB], K.U.Leuven, 2006, 294 blz. + bijlagen

106. VENTURINI Gian Lorenzo, *Poor Children in Europe. An Analytical Approach to the Study of Poverty in the European Union 1994-2000.* Dipartimento di Scienze Sociali, Università degli studi di Torino, Torino (Italië) / Onderzoekseenheid: Centrum voor Sociologisch Onderzoek [CeSO], K.U.Leuven, 2006, 192 blz. + bijlagen

107. EGGERMONT Steven, *The impact of television viewing on adolescents' sexual socialization.* Onderzoekseenheid: School voor Massacommunicatieresearch [SMC], K.U.Leuven, 2006, 244 blz. + bijlagen

108. STRUYVEN Ludovicus, *Hervormingen tussen drang en dwang. Een sociologisch onderzoek naar de komst en de gevolgen van marktwerking op het terrein van arbeidsbemiddeling.* Onderzoekseenheid: Centrum voor Sociologisch Onderzoek [CeSO], K.U.Leuven, 2006, 323 blz. + bijlagen

109. BROOS Agnetha, *De digitale kloof in de computergeneratie: ICT-exclusie bij adolescenten.* School voor Massa-communicatieresearch [SMC], K.U.Leuven, 2006, 215 blz. + bijlagen

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114. VENCATO Maria Francesca, *The Development Policy of the CEECs: the EU Political Rationale between the Fight Against Poverty and the Near Abroad.* Onderzoekseenheid: Instituut voor Internationaal en Europees Beleid [IIEB], K.U.Leuven, 2007, 276 blz. + bijlagen

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124. VANDER STICHELE Alexander, *De culturele alleseter? Een kwantitatief en kwalitatief onderzoek naar 'culturele omnivoriteit' in Vlaanderen.* Onderzoekseenheid: Centrum voor Sociologisch Onderzoek [CeSO], K.U.Leuven, 2008, 414 blz. + bijlagen(boek)

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126. DEVILLé Aleidis, *Schuilen in de schaduw. Een sociologisch onderzoek naar de sociale constructie van verblijfsillegaliteit.* Onderzoekseenheid: Centrum voor Sociologisch Onderzoek [CeSO], K.U.Leuven, 2008, 469 blz. + bijlagen

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129. DEBELS Annelies, *Flexibility and Insecurity. The Impact of European Variants of Labour Market Flexibility on Employment, Income and Poverty Dynamics.* Onderzoekseenheid: Centrum voor Sociologisch Onderzoek [CeSO], K.U.Leuven, 2008, 366 blz. + bijlagen

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137. PEDZIWIATR Konrad Tomasz, *The New Muslim Elites in European Cities: Religion and Active Social Citizenship Amongst Young Organized Muslims in Brussels and London.* Onderzoekseenheid: Centrum voor Sociologisch Onderzoek [CeSO], K.U.Leuven, 2008, 483 blz. + bijlagen

138. DE WEERDT Yve, *Jobkenmerken en collectieve deprivatie als verklaring voor de band tussen de sociale klasse en de economische attitudes van werknemers in Vlaanderen.* Onderzoekseenheden: Centrum voor Sociologisch Onderzoek [CeSO] en Onderzoeksgroep Arbeids-, Organisatie- en Personeelspsychologie, K.U.Leuven, 2008, 155 blz. + bijlagen

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142. WEEKERS Karolien, *Het systeem van partij- en campagnefinanciering in België: een analyse vanuit vergelijkend perspectief.* Onderzoekseenheid: Centrum voor Politicologie [CePO], K.U.Leuven, 2008, 248 blz. + bijlagen

143. DRIESKENS Edith, *National or European Agents? An Exploration into the Representation Behaviour of the EU Member States at the UN Security Council.* Onderzoekseenheid: Instituut voor Internationaal en Europees Beleid [IIEB], K.U.Leuven, 2008, 221 blz. + bijlagen

144. DELARUE Anne, *Teamwerk: de stress getemd? Een multilevelonderzoek naar het effect van organisatieontwerp en teamwerk op het welbevinden bij werknemers in de metaalindustrie.* Onderzoekseenheid: Centrum voor Sociologisch Onderzoek [CeSO], K.U.Leuven, 2009, 454 blz. + bijlagen

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148. GEERTS David, *Sociability Heuristics for Interactive TV. Supporting the Social Uses of Television.* Onderzoekseenheid: Centrum voor Mediacultuur en Communicatietechnologie [CMC], K.U.Leuven, 2009, 201 blz. + bijlagen

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155. TRAPPERS Ann, *Relations, Reputations, Regulations: An Anthropological Study of the Integration of Romanian Immigrants in Brussels, Lisbon and Stockholm.* Onderzoekseenheid: Interculturalism, Migration and Minorities Research Centre [IMMRC], K.U.Leuven, 2009, 228 blz. + bijlagen

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163. PLANCKE Carine, « J'irai avec toi » : désirs et dynamiques du maternel dans les chants et les danses punu (Congo-Brazzaville). Onderzoekseenheden: Instituut voor Antropologie in Afrika [IARA], K.U.Leuven / Laboratoire d'Anthropologie Sociale [LAS, Parijs], EHESS, 2010, 398 blz. + bijlagenboek + DVD + CD

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173. SCHUNZ Simon, *European Union foreign policy and its effects - a longitudinal study of the EU's influence on the United Nations climate change regime (1991-2009).* Onderzoekseenheid: Instituut voor Internationaal en Europees Beleid [IIEB], K.U.Leuven, 2010, 415 blz. + bijlagen

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